Skill Level Results for Montana ITBS and ITED

2001 – 2007

Grades 4, 8, and 11

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Executive Summary

The Montana Office of Public Instruction requested analysis of the skill level results for the Iowa Tests taken by Montana students in grades 4, 8, and 11 from 2001-2007, in five subjects and reference skills, to determine patterns by grade in performance over time and to inform policymakers regarding areas of strength, weakness, and growth in content area strands. Fifty skills in Grade 4, 54 skills in Grade 8, and 28 skills in Grade 11, in Reading, Language Arts, Mathematics, Science, Social Studies, and Reference Materials, are described in this report. The Technical Report and its Appendix give the details. The news is generally excellent. The following table summarizes performance.

Summary of Skill Levels and Trends 2001-2007			
Trend 2001-2007	**Much Above Norm** (by .40 S.D. or better)	**Above Norm** (by .10 - .39 S.D.)	**At Norm**
Increasing	Grade 4 – 5 skills	Grade 4 – 15 skills Grade 8 – 4 skills Grade 11 – 1 skill	Grade 4 – 2 skills
Stable	Grade 4 – 6 skills Grade 11 – 9 skills	Grade 4 – 19 skills Grade 8 – 35 skills Grade 11 – 7 skills	 Grade 8 – 14 skills Grade 11 – 5 skills
Decreasing	 Grade 11 – 4 skills	Grade 4 – 3 skills Grade 8 – 1 skill Grade 11 – 2 skills	

Considering skills tested at all three grades (4, 8, and 11):

- Montana students scored above the norm on most skills (84% of the 132 skills tested).
- Montana students' skills were mostly stable from 2001 to 2007 (72%) or increasing (20%). Only 8% of tested skills decreased.
- Dividing skills crassly into "good news" and "acceptable" – with "good news" skills being anything much above the norm, or anything above the norm that is stable or increasing, and "acceptable" skills being those above the norm but decreasing or at the norm, an interesting pattern emerges. The "acceptable" skills totaled only 27 out of 132 (21%), and *all but three* of those were rote or mechanics-type skills (spelling, capitalization, punctuation, math computation) that are not well aligned with the Montana Content and Performance Standards.
- The skills measured by the ITBS and ITED represent a subset of the educational goals embodied in the Montana Content and Performance Standards. The content area where the ITBS and ITED aligned best was Mathematics. The content area where the ITBS and ITED aligned least was Language Arts; tested skills were mostly about the mechanics of writing and editing.

Looking at the three grades separately (see Skills Lists on pages 4 to 6):

- Grade 4's performance stood out. Of the 50 skills tested, five of them (10%) were both much above the norm (.40 of a standard deviation or more) and increasing. These were

across the curriculum: Analysis and Generalization in Reading, Geometry, Scientific Inquiry and Life Science, and the skill of Searching for Information. An additional 6 skills (again across the curriculum and including some Social Studies skills) were much above the norm and stable.

- A dramatic increase happened in Grade 4 Mathematics, beginning in 2005. This increase was more than twice the size of any other increase for any grade or skill. The same pattern was observed in more than half of Mathematics skills (8 out of 15 tested, 53%) in Grade 4. Five of the remaining 7 skills also increased, although less dramatically. All told, something has been happening with Grade 4 Mathematics, especially in the years 2005-2007.
- Grade 11's performance stood out, although it included some mixed messages. Students performed much above the norm on almost half of its skills (13 out of 28 tested, 46%); however, four of those were decreasing (although still high). These four were more about processing information than knowledge of facts: Appropriateness of (written) Expression, Interpreting Information in Social Studies, Using Sources, and Evaluating Sources.
- Grade 8's performance was solid, mostly (40 out of 54 skills tested, 74%) above the norm (by .10 to .40 of a standard deviation).

Looking at particular skills according to their levels relative to national norms and trends:

Good News

- Skills that were ***increasing and much above the national norm*** are particularly noteworthy. In this category were five skills in reading, mathematics, science, and reference in Grade 4.
- Skills that were ***stable and much above the national norm*** are similarly noteworthy. Both Grades 4 and 11 had skills in this category. Most of these were Grade 4 History and Geography and Grade 11 Reading, Mathematics, and Science skills.
- Skills that were ***decreasing and much above the national norm*** send mixed messages. Most of these were Grade 11 reference and interpretation skills.
- Skills that were ***increasing and above the national norm*** send a positive message about achievement. Noteworthy in this category were a large number of Mathematics skills at all three grades, 4, 8 and 11.
- Skills that were ***stable and above the national norm*** also send a positive message, and about half of the tested skills were in this category. All subjects (Reading, Language Arts, Mathematics, Social Studies, Science, and Reference) were represented among these skills, and all three grade levels. All Grade 8 Reading skills were in this category. If one had to characterize the Montana 2001-2007 ITBS/ITED skills performance in one phrase, it would be this one: stable and above the national norm.

Acceptable

- Skills that were ***decreasing and above the national norm*** send mixed messages. Three of these were Grade 4 capitalization skills.
- Only two skills were ***increasing and at the national norm***. Both were Grade 4 Math Computation skills (multiply and divide with whole numbers).
- Skills that were ***stable and at the national norm*** are, of course, "normal." Most of these were Grade 8 and 11 memory or mechanics skills (spelling, capitalization, punctuation, math computation).

These conclusions apply to results for the state overall. An analysis at the state level masks any differences by region, district, socio-economic status, or other demographics. Also, it is not possible to conclude from these analyses whether the overall strong performance demonstrated by Montana students on the ITBS and ITED for 2001-2007 was a result of the quality of curriculum and instruction, the background and abilities of the students, or both. Realistically, it is likely that both the schools and the students contributed.

And finally, at the risk of oversimplifying a large amount of important information, the analyst offers as recommendations that OPI investigate two questions. They are not meant to substitute for OPI's own reading of the results and represent the analyst's interpretations. It is the analyst's interpretation that the two most salient patterns in the data lead to the following questions:

1. From a curriculum perspective, it would be useful to understand what caused the dramatic increase in Grade 4 mathematics skills. What happened in Grade 4 Mathematics, beginning in 2004-2005?

2. From a curriculum perspective, it would be useful to understand why most of the skills for which Montana students are "merely" at the norm were rote memory and mechanics skills. Does this represent a curriculum philosophy of encouraging higher order thinking and subordinating mechanical skills? Does this represent the effects of the Montana Content Standards on curriculum choices? Or is it merely how students with overall above-the-norm scholastic aptitudes test out? More information about how the Montana Content Standards are being used might help with this question.

Summary of Grade 4 ITBS Skill Levels and Trends 2001-2007			
Trend 2001-2007	**Much Above Norm (by ≥ .40 S.D.)**	**Above Norm (by .10 - .39 S.D.)**	**At Norm**
Increasing	Reading, Analysis and Generalization Geometry Scientific Inquiry Life Science Searching for Information	Vocabulary Spelling, Words with Affixes Correct Spelling Number Properties & Operations Algebra Measurement Probability & Statistics Estimation Multiple Step Problems Read Amounts Compare Quantities & Interpret Relationships & Trends Add with Whole Numbers Subtract with Whole Numbers Government & Society Using Reference Materials	Multiple with Whole Numbers Divide with Whole Numbers
Stable	Reading, Inference and Interpretation Nouns, Pronouns & Modifiers Verbs History Geography Maps & Diagrams, Interpret Info	Reading, Factual Understanding Spelling, Root Words Cap., Place Names Cap., Names of Orgs. & Groups Overcapitalization/Correct Cap. End Punctuation Comma Apostrophes, Quotation Marks, Colons, Semicolons Correct Punctuation Conciseness & Clarity Organization of Ideas Appropriate Use Single Step Problems Math P-S, Approaches & Procedures Economics Earth & Space Science Physical Science Maps & Diagrams, Locate/Process Info Maps & Diagrams, Analyze Info	
Decreasing		Cap., Names & Titles Cap., Dates & Holidays Cap., Writing Conventions	

Summary of Grade 8 ITBS Skill Levels and Trends 2001-2007			
Trend 2001-2007	**Above Norm (by .10 - .39 S.D.)**		**At Norm**
Increasing	Number Properties & Operations Geometry Probability & Statistics Interpret Relationships & Trends		
Stable	Vocabulary Reading, Factual Understanding Reading, Inference & Interpretation Reading, Analysis & Generalization Cap., Names Titles Dates Holidays Cap. Place Names Cap. Names of Orgs & Groups End Punctuation Comma Apostrophes, Quotation Marks, Colons, Semicolons Nouns, Pronouns & Modifiers Verbs Conciseness & Clarity Organization of Ideas Appropriate Use Algebra Measurement Multiple Step Problems P-S Approaches & Procedures Read Amounts Compare Quantities Add & Subtract with Fractions	History Geography Economics Government & Society Scientific Inquiry Life Science Earth & Space Science Physical Science Maps & Diagrams, Locate/Process Information Maps & Diagrams, Interpret Information Maps & Diagrams, Analyze Information Searching for Information Using Search Results	Spelling, Root Words Spelling, Words with Affixes Correct Spelling Cap., Writing Conventions Overcapitalization Correct Capitalization Correct Punctuation Estimation Compute with Whole Numbers Multiply with Fractions Divide with Fractions Add & Subtract with Decimals Multiple with Decimals Divide with Decimals
Decreasing	Using Reference Materials		

Summary of Grade 11 ITED Skill Levels and Trends 2001-2007			
Trend 2001-2007	**Much Above Norm (by ≥ .40 S.D.)**	**Above Norm (by .10 - .39 S.D.)**	**At Norm**
Increasing		Math Computation, Integers	
Stable	Reading, Factual Understanding Reading, Inference & Interpretation Reading, Analysis & Generalization Concepts & Procedures Data Interpretation S.S., Analyzing Information Sci., Interpreting Information Sci., Analyzing & Evaluating Information Analyzing Scientific Investigations	Vocabulary Spelling Capitalization & Punctuation Usage & Grammar Organization of Ideas Math, Problem Solving Algebraic Manipulations	Spelling, Root Words Spelling, Words with Affixes Correct Spelling Math Computation, Decimals/Percents Math Computation, Fractions
Decreasing	Appropriateness of Expression S.S., Interpreting Information Using Sources Evaluating Sources	Sentence Structure S.S., Evaluating Information	

TECHNICAL REPORT
Skill Level Results for Montana ITBS and ITED, 2001 – 2007, Grades 4, 8, and 11

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TECHNICAL REPORT
Skill Level Results for Montana ITBS and ITED, 2001 – 2007, Grades 4, 8, and 11

Introduction

The Montana Office of Public Instruction now has seven years (2001 through 2007) of norm-referenced test data (Iowa Tests of Basic Skills for grades 4 and 8 and Iowa Tests of Educational Development for grade 11). The Montana Office of Public Instruction wished to examine this information in order to contribute to policy and educational decision making. This report was prepared for the Office of Public Instruction in response to its request.

Specifically, Montana Office of Public Instruction requested analysis of the skill level results for the Iowa Tests taken by Montana students in grades 4, 8, and 11 from 2001-2007, in five subjects and in reference skills, to determine patterns by grade in performance over time and to inform policymakers regarding areas of strength, weakness, and growth in content area strands.

Method

What are skill level results? The Iowa Tests of Basic Skills and the Iowa Tests of Educational Development are both batteries of tests. Tests are composed of sets of items at the subject level: Vocabulary, Reading Comprehension, Math Concepts, Math Computation, and the like. Within each test, subsets of items are grouped according to skills. For example, the Grades 4 and 8 Iowa Tests of Basic Skills Reading Comprehension test is composed of items measuring the following skills: Factual Understanding, Inference and Interpretation, and Analysis and Generalization. Riverside Publishing (the publisher of the Iowa Tests) provides norms for these skill levels, in the form of average percent correct on the set of items for each skill. This skill level is the focus of the analyses presented in this report.

Data sources. Riverside Publishing provided the Montana Office of Public Instruction with data files in electronic form (text files and format specifications) for 2001 through 2007, and OPI made them available for this report. For all analyses, the student-level data files were used (as opposed to the state-level summaries). This was necessary in order to use the item-level responses to put together the various subtest scores. For some of the years, OPI had several versions of the student-level data files. The analyst (Sue Brookhart) met with Mike Chapman at OPI to confirm which files were the most accurate, and these were the files used for analysis. Where two versions of a file existed, the file with the most recent file creation date was selected.

Additional information used in the analysis was obtained from two technical manuals, prepared at the University of Iowa and published by Riverside Publishing (Forsyth, Ansley, Feldt, & Alnot, 2002; Hoover, Dunbar, & Frisbie, 2001). The manuals identified which items belonged in which skills test and provided norms, in the form of average percent correct, for each skills test. Spring 2000 norms were used; Montana administered the ITBS and ITED in the Spring each year. The publisher reports these norms were based on a stratified sample (stratified by geographic region, district enrollment, and socio-economic status) of public schools, plus a sample of non-public schools, of over 170,000 students for the ITBS and over 37,000 students for the ITED.

Data analysis. Data analysis proceeded in the following steps.

1. *Data preparation.* Data for each year were read into SPSS files, using the file format specifications. Variables were labeled.
2. *Data selection.* Within years, separate files were created for Grades 4, 8, and 11. Data were only included for analysis for students who experienced on-level testing, students who took Level 10 in Grade 4, Level 14 in Grade 8, and Level 17 in Grade 11, respectively.
3. *Skills test variable creation.* The original data files included scores for each test (scored by Riverside), but not skill-level scores. The data files also included the item responses for each student. Information about which item from each test belonged to which skills test was obtained from technical manuals. Skill variables were created by taking the average of item responses for each student for each skill, and these new variables were saved for further analysis.
4. *Skills test verification.* In order to verify that the newly created skill variables were accurate, two checks were made, one empirical and one conceptual.
    a. Empirically, it was possible to compare the Vocabulary test results (scored by Riverside) and the created Vocabulary skill variable (created by the analyst), because there are no sub-tests on the Vocabulary test. For each year, in each grade (that is, in 7x3 = 21 data sets), the Vocabulary test results (scored by Riverside) and the created Vocabulary skill variable (created by the analyst) matched exactly. This offers empirical evidence that the skill variables were accurate (item-level data were read and averaged properly). Also, results for the set of skills reported for each of the other tests were examined to make sure they were consistent with the results for the parent test.
    b. Conceptually, after the skill-level analyses reported below, all the skills test results were reviewed to make sure they were logical and interpretable. The fact that results from 21 different data sets yielded strengths and weaknesses that were consistent and interpretable across years also offers evidence that the skill variables were accurately constructed.
5. *Test and Skills analysis.*
    a. For each year and grade, descriptive statistics were calculated for each test raw score (provided in the data file by Riverside): sample size, minimum, maximum, mean, standard error of the mean, and standard deviation. Then these statistics were converted to proportions (by dividing by the maximum possible score on each test), in order to put them into the "average percent correct" metric reported in the norms tables.
    b. For each year and grade, descriptive statistics were calculated for each skills test: sample size, minimum, maximum, mean, standard error of the mean, and standard deviation. Scale reliability was computed. Because the skills tests had been created from item statistics (1=correct, 0=incorrect), their scores were already proportions (e.g., a score of .60 on a subtest meant the student got 60% of the items right). In order to ensure that the same sample of students was used for both test and skill analyses, only those students who had a raw score for a particular test were used to compute scores for the skills within that test. (This "data cleaning" procedure

resulted in removing only one or two cases (out of approximately 11,000) for each analysis, so it did not make much mathematical difference.)

c. Next, each mean was compared to the norm, and the amount above (or below) the norm, in percent correct, was computed.

d. Finally, the amount by which average performance was above (or below) the norm was divided by the pooled standard deviation (over 7 years) for the test, to provide a measure of standardized mean difference (Cohen, 1988). The pooled standard deviation was used as an estimate of the norm-group standard deviation (which would ordinarily be used to standardize the difference) because it was not available. While this is a limitation, the pooled Montana standard deviation over 7 years is based on data from over 70,000 students and should be a very good estimate. Using the standardized mean difference allows comparison from test to test, necessary for answering questions about comparative strengths and weaknesses. It also allows interpretation about whether the mean differences were small, medium, or large, because there are conventional benchmarks: a standardized mean difference of .20 describes a small effect, a standardized mean difference of .50 describes a medium effect, and a standardized mean difference of .80 describes a large effect (Cohen, 1988, p. 40). Using Cohen (1988) as a guide, standardized mean differences between .10 and .39 were labeled "small," .40 and above "medium." (There were no "large" standardized mean differences in the .80 range.)

6. *Graphical analyses.* In order to interpret the results of the analysis steps above – to make sense of the hundreds and hundreds of numbers in spreadsheets – two different methods were used to organize data into displays that could be interpreted. The skill level was the focus of both of these methods, in keeping with the purpose of the study.
    a. For each skill at each grade, summary tables of performance over time were constructed. Values were rounded to the nearest hundredth for presentation in the tables.
    b. For each skill at each grade, graphs over time were constructed.
    c. These graphs and tables are presented in the Appendix.
7. *Criteria for conclusions.* In order to summarize the volume of data in the Appendix, criteria for drawing conclusions about trend and comparison with national norms were used. With large sample sizes, almost any differences are statistically significant. Therefore, criteria were used to identify patterns deemed substantial enough to suggest practical significance.
    a. To describe the trend in performance for each skill over time, the average performance for 2001 and 2002 was subtracted from the average performance for 2006 and 2007, and then divided by the pooled standard deviation. A rise or fall of .10 standard deviations or more was interpreted as an "increase" or "decrease," respectively, and any changes of lesser magnitude were interpreted as "stable" performance. This amounted to a change of approximately 3 percentage points in all cases except for Grade 4 Mathematics.
    b. To describe the comparison of Montana students to the national norm, standardized mean differences for all seven years were inspected. If more than half of the standardized mean differences were of "medium" strength, the skill was labeled "much above" the norm. If more than half of the standardized mean differences were of "small" strength, the skill was labeled "above" the norm.

Results

In the Executive Summary, results were presented in summary form based on performance. The Technical Report contains the evidence upon which the summary and conclusions rest. Readers should note that the length of the skills tests varied a great deal. Some skills tests had as few as 3 items and some as many as 42. Reliability, therefore, varied greatly as well. Reliability for skills tests was better for Grade 11 (mean=.74, min=.48, max=.93) than for Grade 4 (mean=.61, min=.25, max=.91) or Grade 8 (mean=.63, min=.31, max=.90), as expected because skills tests in Grade 11 had more items. This is not sufficient for reliable conclusions about individuals, but is acceptable for looking at trends in mean performance replicated over 7 samples of 10,000 or so each.

In this Technical Report, results are presented by subject: Reading, Language Arts, Mathematics, Social Studies, Science, and Using Reference/Source Material. Overall test results are reported, and then skill results from items within each test are reported. The analysis focuses on identifying strengths and weaknesses at the skill level, interpreting patterns in performance across years, and mapping these interpretations onto the Montana Content Standards and Performance Descriptors. Tables and graphs for each skill are presented in the Appendix.

Reading

Test and skill level results. The ITBS and ITED have two reading tests: Vocabulary and Reading Comprehension. The Reading Comprehension test contains three skills tests: Factual Understanding, Inference and Interpretation, and Analysis and Generalization.

Reading Skills Summary			
Test or Skill	**Trend 2001–2007**		**Comparison to National Norm**
Vocabulary	4	Increase	Above
(Skill equivalent to Test)	8	Stable	Above
	11	Stable	Above
Reading Test	4	Increase	Above
	8	Stable	Above
	11	Stable	Above
Factual Understanding Skill	4	Stable	Above
	8	Stable	Above
	11	Stable	Much Above
Inference & Interpretation Skill	4	Stable	Much Above
	8	Stable	Above
	11	Stable	Much Above
Analysis & Generalization Skill	4	Increase	Much Above
	8	Stable	Above
	11	Stable	Much Above

Vocabulary. All grades and all years scored significantly above norm on the Vocabulary test (and skill). Grade 4 showed a rising pattern across years, especially from 2002 to 2006. Other

grades have steady performance across years. Standardized mean differences in Grade 4 ranged from .29 to .43. Standardized mean differences in Grade 8 ranged from .17 to .22. Standardized mean differences in Grade 11 ranged from .30 to .34.

Factual Understanding. All grades and all years scored significantly above norm on the Factual Understanding skill, grade 11 much above. On balance, performance was stable over the years. Standardized mean differences in Grade 4 ranged from .28 to .39. Standardized mean differences in Grade 8 ranged from .23 to .27. Standardized mean differences in Grade 11 ranged from .34 to .43.

Inference and Interpretation. All grades and all years scored significantly above norm on the Inference and Interpretation skill, grades 4 and 11 much above. Overall performance was steady over the years. Standardized mean differences in Grade 4 ranged from .39 to .50. Standardized mean differences in Grade 8 ranged from .25 to .30. Standardized mean differences in Grade 11 range from .40 to .46.

Analysis and Generalization. All grades and all years scored significantly above norm on the Analysis and Generalization skill, grades 4 and 11 much above. Grade 4 showed a rising pattern across years, especially from 2002 to 2006. Other grades had steady performance across years. Standardized mean differences in Grade 4 ranged from .32 to .52. Standardized mean differences in Grade 8 ranged from .23 to .27. Standardized mean differences in Grade 11 ranged from .42 to .47.

Alignment to Montana Content Standards. Montana has five content standards in Reading:

- Content Standard 1—Students construct meaning as they comprehend, interpret, and respond to what they read.
- Content Standard 2—Students apply a range of skills and strategies to read.
- Content Standard 3—Students set goals, monitor, and evaluate their progress in reading.
- Content Standard 4—Students select, read, and respond to print and nonprint material for a variety of purposes.
- Content Standard 5—Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.

The ITBS/ITED Vocabulary and Reading Comprehension skills tests are most relevant to Content Standards 1 and 2. The Vocabulary test supports Benchmark 6 in Content Standard 2, which is about developing vocabulary as one of the "skills and strategies" students apply to read. The Reading Comprehension Factual Understanding skill, which includes questions that ask students to understand stated information, supports constructing meaning (Content Standard 1) in general, and relates most closely to Benchmark 4, about demonstrating understanding of main ideas and important facts and supporting details.

Because Reading skills as measured by the ITBS and ITED are a strength (in some cases, a major strength) of Montana students, it is likely that they are also competent on other, related Reading standards. However, Reading Content Standards 3, 4 and 5 were not measured by these skills tests.

Language Arts

Test and skill level results. The ITBS has four Language Arts tests: Spelling, Capitalization, Punctuation, and Usage and Expression. Each one measures several skills in these areas. The ITED has two Language Arts tests: Language: Revising Written Materials and a separate Spelling test. Both of these tests measure several skills as well.

Spelling Skills Summary			
Test or Skill	**Trend 2001–2007**		**Comparison to National Norm**
Spelling Test	4	Stable	Above
	8	Stable	At Norm
	11	Stable	At Norm
Root Words Skill	4	Stable	Above
	8	Stable	At Norm
	11	Stable	At Norm
Words with Affixes Skill	4	Increase	Above
	8	Stable	At Norm
	11	Stable	At Norm
Correct Spelling Skill	4	Increase	Above
	8	Stable	At Norm
	11	Stable	At Norm

Spelling Skill – Root Words. Grade 4 scored significantly above norm on the Root Words skill. Performance in Grades 8 and 11 was not significantly different from the norm. Standardized mean differences in Grade 4 ranged from .11 to .20. Standardized mean differences in Grade 8 ranged from -.01 to .05. Standardized mean differences in Grade 11 ranged from .04 to .08.

Spelling Skill – Words with Affixes. Grade 4 scored significantly above norm on the Words with Affixes skill. Performance in Grades 8 and 11 was at the norm. Grade 4 performance increased over time. Grade 8 and 11 performance was stable. Standardized mean differences in Grade 4 ranged from .19 to .32. Standardized mean differences in Grade 8 ranged from .02 to .06, and standardized mean differences in Grade 11 ranged from .02 to .08.

Spelling Skill – Correct Spelling. Grade 4 scored significantly above norm on the Correct Spelling skill. Performance in Grade 8 and 11 was at the norm. Performance in Grade 4 increased over time. Standardized mean differences in Grade 4 ranged from .09 to .20. Standardized mean differences in Grade 8 ranged from -.03 to .03, and standardized mean differences in Grade 11 ranged from -.01 to .05.

Capitalization Skills Summary			
Test or Skill	**Trend 2001–2007**		**Comparison to National Norm**
Capitalization Test	4	Decrease	Above
	8	Stable	Above
Names & Titles Skill	4	Decrease	Above
Dates & Holidays Skill	4	Decrease	Above
Names & Titles/ Dates & Holidays Skill	8	Stable	Above
Place Names Skill	4	Stable	Above
	8	Stable	Above
Names of Organ- izations & Groups Skill	4	Stable	Above
	8	Stable	Above
Writing Conventions Skill	4	Decrease	Above
	8	Stable	At Norm
Overcapitalization & Correct Capitalization Skill	4	Stable	Above
Overcapitalization Skill	8	Stable	At Norm
Correct Capitalization Skill	8	Stable	At Norm

Capitalization Skill – Names and Titles, Dates and Holidays. Grade 4 had two separate skills tests for Names & Titles and Dates & Holidays. Performance was above the norm overall, but decreasing in grade 4. Standardized mean differences in Grade 4 ranged from .13 to .31. Standardized mean differences in Grade 8 ranged from -.00 to .15. Standardized mean differences in Grade 11 ranged from .09 to .20.

Capitalization Skill – Place Names. Grade 4 and Grade 8 students scored above the norm on the Place Names skill. Overall performance was stable. Standardized mean differences in Grade 4 ranged from .18 to .32. Standardized mean differences in Grade 8 ranged from .13 to .23.

Capitalization Skill – Names of Organizations and Groups. Grade 4 and Grade 8 students scored above the norm on the Names of Organizations and Groups skill. Overall performance was stable. Standardized mean differences in Grade 4 ranged from .21 to .34. Standardized mean differences in Grade 8 ranged from .16 to .26.

Capitalization Skill – Writing Conventions. Grade 4 students scored above the norm on the Writing Conventions skill, but performance decreased. Grade 8 performance was at the norm and stable. Standardized mean differences in Grade 4 ranged from .05 to .24. Standardized mean differences in Grade 8 ranged from -.03 to .05.

Capitalization Skill – Overcapitalization and Correct Capitalization. Grade 4 had one skills test for Overcapitalization/Correct Capitalization. Grade 8 had two separate skills tests: Overcapitalization and Correct Capitalization. Grade 4 students scored above the norm, and Grade 8 students at the norm. Standardized mean differences in Grade 4 ranged from .10 to .15.

Standardized mean differences in Grade 8 for the Overcapitalization skill ranged from -.04 to .04. Standardized mean differences in Grade 8 for the Correct Capitalization skill ranged from .08 to .12.

Punctuation Skills Summary			
Test or Skill	**Trend 2001–2007**		**Comparison to National Norm**
Punctuation Test	4	Stable	Above
	8	Stable	Above
End Punctuation Skill	4	Stable	Above
	8	Stable	Above
Comma Skill	4	Stable	Above
	8	Stable	Above
Apostrophes, Quotation Marks, Colons, Semicolons Skill	4	Stable	Above
	8	Stable	Above
Correct Punctuation Skill	4	Stable	Above
	8	Stable	At Norm

Punctuation Skill – End Punctuation. Students in Grades 4 and 8 scored above the norm on the End Punctuation skill. Performance has been steady across years. Standardized mean differences in Grade 4 ranged from .20 to .39. Standardized mean differences in Grade 8 ranged from .08 to .14.

Punctuation Skill – Comma. Students in Grades 4 and 8 scored above the norm on the Comma skill. Performance has been stable across years. Standardized mean differences in Grade 4 ranged from .17 to .30. Standardized mean differences in Grade 8 ranged from.11 to .21.

Punctuation Skill – Apostrophes/Quotation Marks/Colons/Semicolons. Students in Grades 4 and 8 scored above the norm on the Apostrophes/Quotation Marks/Colons/Semicolons skill. Performance has been stable across years. Standardized mean differences in Grade 4 ranged from .09 to .21. Standardized mean differences in Grade 8 ranged from .09 to .16.

Punctuation Skill – Correct Punctuation. Students in Grades 4 scored above the norm, and students in Grade 8 approximately at the norm, on the Correct Punctuation skill. In both Grades 4 and 8, performance has remained stable over the years. Standardized mean differences in Grade 4 ranged from .21 to .25. Standardized mean differences in Grade 8 ranged from .03 to .07.

Usage and Expression Skills Summary			
Test or Skill	**Trend 2001–2007**		**Comparison to National Norm**
Usage and Expression Test	4	Stable	Much Above
	8	Stable	Above
Nouns, Pronouns, & Modifiers Skill	4	Stable	Much Above
	8	Stable	Above
Verbs Skill	4	Stable	Much Above
	8	Stable	Above
Conciseness & Clarity Skill	4	Stable	Above
	8	Stable	Above
Organization of Ideas Skill	4	Stable	Above
	8	Stable	Above
Appropriate Use Skill	4	Stable	Above
	8	Stable	Above

Usage and Expression Skill – Nouns, Pronouns, and Modifiers. Students in Grades 4 scored much above the norm on the Nouns, Pronouns, and Modifiers skill. Students in Grade 8 scored above the norm. In both Grades 4 and 8, performance has remained stable over the years. Standardized mean differences in Grade 4 ranged from .39 to .49. Standardized mean differences in Grade 8 ranged from .19 to .24.

Usage and Expression Skill – Verbs. Students in Grades 4 scored much above the norm on the Verbs skill. Students in Grade 8 scored above the norm. In both Grades 4 and 8, performance has remained stable over the years. Standardized mean differences in Grade 4 ranged from .38 to .46. Standardized mean differences in Grade 8 ranged from .10 to .16.

Usage and Expression Skill – Conciseness and Clarity. Students in Grades 4 and 8 scored above the norm on the Conciseness and Clarity skill. Performance has remained stable over the years. Standardized mean differences in Grade 4 ranged from .19 to .32. Standardized mean differences in Grade 8 ranged from .18 to .29.

Usage and Expression Skill – Organization of Ideas. Students in Grades 4 and 8 scored above the norm on the Organization of Ideas skill. Performance has remained stable over the years. Standardized mean differences in Grade 4 ranged from .19 to .26. Standardized mean differences in Grade 8 ranged from .17 to .22.

Usage and Expression Skill – Appropriate Use. Students in Grades 4 and 8 scored above the norm on the Appropriate Use skill. Performance has remained stable over the years. Standardized mean differences in Grade 4 ranged from .28 to .38. Standardized mean differences in Grade 8 ranged from .09 to .17.

Language: Revising Written Materials, Grade 11, Summary			
Test or Skill	**Trend 2001–2007**		**Comparison to National Norm**
Language: Revising Written Materials Test	11	Stable	Above
Spelling Skill	11	Stable	Above
Capitalization & Punctuation Skill	11	Stable	Above
Usage & Grammar Skill	11	Stable	Above
Sentence Structure Skill	11	Decrease	Above
Organization of Ideas Skill	11	Stable	Above
Appropriateness of Expression Skill	11	Decrease	Much Above

Language: Revising Written Materials Skills – Grade 11 Spelling, Capitalization and Punctuation, Usage and Grammar, Sentence Structure, Organization of Ideas, and Appropriateness of Expression. In the Grade 11 ITED, the Language skills are tested differently than for the Grades 4 and 8 ITBS. A separate Spelling test is given (see above). All the rest of the Language skills, including another Spelling skills test, are subsumed in a test called Language: Revising Written Materials, with six skills tests. The focus, as the name implies, is on the language skills needed to revise one's written work.

For all six Revising Written Materials skills, for all years, Grade 11 students performance was above the norm, much above the norm for Appropriateness of Expression. Achievement in Spelling, Capitalization and Punctuation, Usage and Grammar, and Organization of Ideas remained stable over time. Performance in Sentence Structure and Appropriateness of Expression declined over the years.

Alignment to Montana Content Standards. Montana has six Content Standards in Writing, which is the aspect of Language Arts most relevant to the ITBS and ITED tests.

- Content Standard 1—Students write clearly and effectively.
- Content Standard 2—Students apply a range of skills and strategies in the writing process.
- Content Standard 3—Students evaluate and reflect on their growth as writers.
- Content Standard 4—Students write for a variety of purposes and audiences.
- Content Standard 5—Students recognize the structures of various forms and apply these characteristics to their own writing.
- Content Standard 6—Students use the inquiry process, problem-solving strategies, and resources to synthesize and communicate information.

The Language Arts skills measured by the ITBS Spelling, Capitalization, Punctuation, and Usage and Expression subtests in Grades 4 and 8 and by the ITED Language Arts: Revising Written Materials subtests in Grade 11 are most relevant to Content Standards 1 and 2. Benchmark 4 in Content Standard 1 reads "apply conventions of standard written English (e.g., spelling, punctuation, usage) appropriate for grade level and purpose." Benchmark 4 in Content Standard 2 reads "edit by correcting errors (e.g., grammar, capitalization, punctuation, spelling, usage)." These mechanical skills are the focus of the tests and subtests in the ITBS and ITED.

Writing Content Standards 3, 4, 5, and 6 were not measured by these tests, nor were other Benchmarks within Content Standards 1 and 2. In addition, of course, the Language Arts of Speaking and Listening were not addressed in these tests.

Montana students did well on most of the mechanical skills measured. An exception was Spelling. It would not be accurate to call Spelling a "weakness" in Montana. Spelling performance was mostly at the norm. It is an area of relative weakness in Montana because performance in most other subjects and skills was so strong, and Spelling performance was not at that level.

Mathematics

Test and skill level results. The ITBS and ITED mathematics tests had different structures. The ITBS had three mathematics tests: Math Concepts and Estimation, Math Problem Solving and Data Interpretation, and Math Computation. The ITED had two mathematics tests: Mathematics: Concepts and Problem Solving and Computation. All Mathematics tests included skills tests within them.

A dramatic increase happened in Grade 4 Mathematics, beginning in 2005. This increase was more than twice the size of any other increase for any grade or skill. This pattern was observed in more than half of Mathematics skills tested in Grade 4. Increases in other grades and skills that were substantial enough to warrant reporting were in the neighborhood of a gain of 3 percentage points from 2001 to 2007, approximately a tenth of a standard deviation. In contrast, increases in 8 (of 15, or over half) of the Grade 4 Mathematics skills tested, including some in each test category (Math Concepts, Problem Solving, and Computation) were between 5 and 11 percentage points, between two- and four-tenths of a standard deviation. In other words, these mathematics increases represented gains of more than twice the size of any other tested skill gains in Montana for the period 2001 to 2007. Also interesting is the pattern of these gains, where most of the change occurred in 2005 and was maintained through 2007. In addition and consistent with this increasing pattern, 5 of the remaining 7 Grade 4 Mathematics skills rose between 2 and 4 percentage points, between one and two-tenths of a standard deviation.

Graphs of these changes may be seen in the Appendix: Graphs and Tables pages 24-36. The most dramatic changes between 2001 and 2007 in Grade 4 Mathematics were in these eight skills: Number Properties and Operations skill performance rose 6 percentage points, approximately .3 standard deviations; Algebra skill performance rose 5 percentage points (.2 sd); Geometry skill performance rose 11 percentage points (.4 sd, and the most dramatic rise); Probability and Statistics skill performance rose 7 percentage points (.2 sd); problem-solving skills performance on Read Amounts rose 6 percentage points (.2 sd) and on Compare Quantities and Interpret Relationships and Trends rose 5 percentage points (.2 sd); Math Computation skills Multiply with Whole Numbers and Divide with Whole Numbers rose 5 and 7 percentage points (.3 sd), respectively.

Math Concepts and Estimation Skills Summary			
Test or Skill	**Trend 2001–2007**		**Comparison to National Norm**
Math Concepts and Estimation Test	4	Increase	Above
	8	Stable	Above
Number Properties & Operations Skill	4	Increase	Above
	8	Increase	Above
Algebra Skill	4	Increase	Above
	8	Stable	Above
Geometry Skill	4	Increase	Much Above
	8	Increase	Above
Measurement Skill	4	Increase	Above
	8	Stable	Above
Probability & Statistics Skill	4	Increase	Above
	8	Increase	Above
Estimation Skill	4	Increase	Above
	8	Stable	At Norm

Math Concepts and Estimation Skill – Number Properties and Operations. For all years, students in Grade 4 and Grade 8 scored above the norm for the Number Properties and Operations skill. In both Grade 4 and Grade 8, performance increased over the years. Standardized mean differences in Grade 4 ranged from .08 to .42. Standardized mean differences in Grade 8 ranged from .17 to .28.

Math Concepts and Estimation Skill – Algebra. For all years, students in Grade 4 and Grade 8 scored above the norm for the Algebra skill. In Grade 4, performance increased over the years. Standardized mean differences in Grade 4 ranged from .12 to .35. Standardized mean differences in Grade 8 ranged from .16 to .26.

Math Concepts and Estimation Skill – Geometry. For all years, students in Grade 4 and Grade 8 scored above the norm for the Geometry skill. In both Grade 4 and Grade 8, performance increased over the years. Performance in Grade 4 experienced a particularly noticeable jump between 2004 and 2005. Standardized mean differences in Grade 4 ranged from .16 to .62. Standardized mean differences in Grade 8 ranged from .15 to .32.

Math Concepts and Estimation Skill – Measurement. For all years, students in Grade 4 and Grade 8 scored above the norm for the Measurement skill. In Grade 4, performance increased, and in Grade 8, performance remained stable. Standardized mean differences in Grade 4 ranged from .20 to .34. Standardized mean differences in Grade 8 ranged from .14 to .17.

Math Concepts and Estimation Skill – Probability and Statistics. For all years, students in Grade 4 and Grade 8 scored above the norm for the Probability and Statistics skill. In both Grade 4 and Grade 8, performance increased over the years. Standardized mean differences in Grade 4 ranged from .18 to .39. Standardized mean differences in Grade 8 ranged from .17 to .30.

Math Concepts and Estimation Skill – Estimation. Students in Grade 4 scored above the norm, and students in Grade 8 at the norm, for the Estimation skill. In Grade 4, performance increased over the years. In Grade 8, performance remained stable across the years. Standardized mean differences in Grade 4 ranged from .19 to .35. Standardized mean differences in Grade 8 ranged from .06 to .09.

Math Concepts and Problem Solving, Grade 11, Skills Summary			
Test or Skill	**Trend 2001–2007**		**Comparison to National Norm**
Math Concepts and Problem Solving Test	11	Stable	Much Above
Math Concepts & Procedures Skill	11	Stable	Much Above
Data Interpretation Skill	11	Stable	Much Above
Problem Solving Skill	11	Stable	Above

Mathematical Concepts and Problem Solving Skills – Grade 11. In Grade 11, the ITED has one test for both Mathematical Concepts and Problem Solving. The test includes three skills. For Mathematical Concepts and Procedures (including numbers, operations, algebra, measurement, and probability) and Data Interpretation, students in Grade 11 scored much above the norm. They scored above the norm in Problem Solving. Performance was stable over the years. Standardized mean differences for Mathematical Concepts and Procedures ranged from .44 to .49, for Data Interpretation from .40 to .46, and for Problem Solving from .26 to .31.

Math Problem Solving & Data Interpretation Skills Summary			
Test or Skill	**Trend 2001–2007**		**Comparison to National Norm**
Math Problem Solving & Data Interpretation Test	4	Increase	Above
	8	Stable	Above
Single-step Problems Skill	4	Stable	Above
Multiple-step Problems Skill	4	Increase	Above
Multiple-step Problems Skill	8	Stable	Above
Approaches & Procedures Skill	4	Stable	Above
	8	Stable	Above
Read Amounts Skill	4	Increase	Above
	8	Stable	Above
Compare Quantities & Interpret Relationships & Trends Skill	4	Increase	Above
Compare Quantities Skill	8	Stable	Above
Interpret Relationships & Trends Skill	8	Increase	Above

Math Problem Solving and Data Interpretation Skill – Single-step and Multiple-step Problem Solving. Grade 4 scored above the norm for both Single-step and Multiple-step Problem Solving skills, and Grade 8 scored above the norm for Multiple-step Problem Solving skills. These skills scores remained stable across the years, except for Grade 4 Multiple-step Problem Solving, which increased. Standardized mean differences for Grade 4 Single-step Problems ranged from .24 to .31. Standardized mean differences for Grade 4 Multiple-step

Problems ranged from .16 to .35. Standardized mean differences for Grade 8 Multiple-step Problems ranged from .14 to .18.

Math Problem Solving and Data Interpretation Skill – Approaches and Procedures. Both Grade 4 and Grade 8 performance was above the norm for the Problem-Solving Approaches and Procedures skill. Performance remained stable over the years. Standardized mean differences in Grade 4 ranged from .24 to .31. Standardized mean differences in Grade 8 ranged from .23 to .29.

Math Problem Solving and Data Interpretation Skill – Read Amounts. Grade 4 and Grade 8 performance was above the norm for the Read Amounts skill. Performance in Grade 4 increased, and performance in Grade 8 remained stable over the years. Standardized mean differences in Grade 4 ranged from .21 to .50. Standardized mean differences in Grade 8 ranged from .18 to .22.

Math Problem Solving and Data Interpretation Skill – Compare Quantities and Interpret Relationships and Trends. Grade 8 had separate subtests for Compare Quantities and Interpret Relationships and Trends. Grade 4 had one subtest for both these topics (Compare Quantities and Interpret Relationships and Trends) together. Both grades, in all years, scored above the norm in these skills. Grade 4 scores and Grade 8 Interpret Relationships and Trends scores rose across the years. Grade 8 Compare Quantities performance remained stable across the years. Standardized mean differences in Grade 4 ranged from .20 to .44. Standardized mean differences in Grade 8 ranged from .17 to .24 for Compare Quantities and from .25 to .35 for Interpret Relationships and Trends.

Math Computation Skills Summary			
Test or Skill	**Trend 2001–2007**		**Comparison to National Norm**
Math Computation Test	4	Increase	Above
Add with Whole Numbers Skill	4	Increase	Above
Subtract with Whole Numbers Skill	4	Increase	Above
Multiply with Whole Numbers Skill	4	Increase	At Norm
Divide with Whole Numbers Skill	4	Increase	At Norm
Math Computation Test	8	Stable	At Norm
Compute with Whole Numbers Skill	8	Stable	At Norm
Add & Subtract with Fractions Skill	8	Stable	Above
Multiply with Fractions Skill	8	Stable	At Norm
Divide with Fractions Skill	8	Stable	At Norm
Add & Subtract with Decimals Skill	8	Stable	At Norm
Multiply with Decimals Skill	8	Stable	At Norm
Divide with Decimals Skill	8	Stable	At Norm
Math Computation Test	11	Increase	Above
Integers Skill	11	Increase	Above
Decimals/Percents Skill	11	Stable	At Norm
Fractions Skill	11	Stable	At Norm
Algebraic Manipulations Skill	11	Stable	Above

Math Computation – Grade 4. The ITBS Grade 4 Math Computation test included four skills. For both Add with Whole Numbers and Subtract with Whole Numbers, Grade 4 students scored above the norm, and performance increased over the years. For both Multiply with Whole Numbers and Divide with Whole Numbers, Grade 4 students scored at the norm, and performance increased over the years. Standardized mean differences for Add with Whole Numbers ranged from .11 to .26, for Subtract with Whole Numbers from .04 to .27, for Multiply with Whole Numbers from -.04 to .25, and for Divide with Whole Numbers from -.10 to .22.

Math Computation – Grade 8. The ITBS Grade 8 Math Computation test had seven skills tests. Performance on all skills was at the norm except for the Add and Subtract with Fractions skill, which was above the norm. Performance was stable across years. Standardized mean differences for Compute with Whole Numbers ranged from -.00 to .07, for Add and Subtract with Fractions from .03 to .14, for Multiply with Fractions from -.00 to .05, for Divide with Fractions from -.05 to .06, for Add and Subtract with Decimals from -.09 to .01, for Multiply with Decimals from -.13 to -.02, and for Divide with Decimals from -.07 to .04.

Math Computation – Grade 11. The ITED Grade 11 Math Computation test had four skills tests. On the Integers skill, performance was above the norm and increasing over time. On the Decimals/Percents and Fractions skills, performance was stable and at the norm. On the Algebraic Manipulation skill, performance was above the norm and stable. Standardized mean differences in for Integers and Algebraic Manipulation ranged from .10 to .24. Standardized mean differences for Decimals/Percents ranged from .05 to .11. Standardized mean differences for Fractions ranged from -.12 to -.01. Standardized mean differences for Algebraic Manipulation ranged from .14 to .21.

Alignment to Montana Content Standards. Montana has seven Content Standards in Mathematics.

- Content Standard 1 - Students engage in the mathematical processes of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology.
- Content Standard 2 - Students demonstrate understanding of and an ability to use numbers and operations.
- Content Standard 3 - Students use algebraic concepts, processes, and language to model and solve a variety of real-world and mathematical problems.
- Content Standard 4 - Students demonstrate understanding of shape and an ability to use geometry.
- Content Standard 5 - Students demonstrate understanding of measurable attributes and an ability to use measurement processes.
- Content Standard 6 - The students demonstrate understanding of an ability to use data analysis, probability, and statistics.
- Content Standard 7 - Students demonstrate understanding of and an ability to use patterns, relations and functions.

It is perhaps in Mathematics that the ITBS and ITED tests and subtests come closest to representing the Montana standards. Multi-step problem solving and estimation (Benchmarks 1

and 2 in Content Standard 1) skills are both measured. In Grades 4 and 8, the Math Concepts measured (Number and Operations, Algebra, Geometry, Measurement, and Probability and Statistics) mirror Math Content Standards 2 through 6, respectively. In Grade 11, all these are grouped together in a Math Concept subtest.

Math Concepts and Problem-solving skills were strengths for Montana students, with the exception of Grade 8 Estimation, which was very close to the norm. The Grade 11 Mathematical Concepts and Procedures and Grade 11 Data Interpretation skills were exceptional and consistently strong. Also noteworthy was the recent (2005-2007) very strong and increasing (even by Montana standards) performance in Grade 4 Algebra, Geometry, and Probability and Statistics.

In the Montana Content Standards, Math Computation is subsumed under Standard 2, Numbers and Operations: Benchmark 3 in Grade 4, and Benchmark 1 in Grades 8 and 12, describe being able to use the four basic operations. As the Math Computation summary chart above shows, a few Math Computation skills were strengths for Montana students, but most were not. Montana Math Computation skills were mostly at the norm. The only year/grade/skill combinations in the entire analysis that were below the norm were in Math Computation: 2002 Grade 4 Divide with Whole Numbers, 2001 and 2002 Grade 8 Multiply with Decimals, and 2001 and 2002 Grade 11 Fractions.

Social Studies

Test and skill level results. The ITBS and ITED Social Studies tests had different structures. The ITBS Social Studies test had four content-area skills: History, Geography, Economics, and Government and Society. The ITED Social Studies test was called Analysis of Social Studies Materials. It provided content-area material for measuring skills about using that material: Interpreting Information, Analyzing Information, and Evaluating Information.

Social Studies Skills Summary			
Test or Skill	**Trend 2001–2007**		**Comparison to National Norm**
Social Studies Test	4	Stable	Much Above
	8	Stable	Above
History Skill	4	Stable	Much Above
	8	Stable	Above
Geography Skill	4	Stable	Much Above
	8	Stable	Above
Economics Skill	4	Stable	Above
	8	Stable	Above
Government & Society Skill	4	Increase	Above
	8	Stable	Above

History. Performance on the History skill in Grade 8 was above the norm, and much above the norm in Grade 4. Performance remained stable throughout the years. Standardized mean

differences in Grade 4 ranged from .30 to .47. Standardized mean differences in Grade 8 ranged from .21 to .28.

Geography. Performance on the Geography skill in Grade 8 was above the norm, and much above the norm in Grade 4. Performance remained stable throughout the years. Standardized mean differences in Grade 4 ranged from .42 to .51. Standardized mean differences in Grade 8 ranged from .23 to .34.

Economics. Performance on the Economics skill in Grades 4 and 8 was above the norm. Performance remained stable throughout the years. Standardized mean differences in Grade 4 ranged from .22 to .36. Standardized mean differences in Grade 8 ranged from .07 to .17.

Government and Society. Performance on the Government and Society skill in Grades 4 and 8 was above the norm. Performance in Grade 4 increased, and performance in Grade 8 remained stable throughout the years. Standardized mean differences in Grade 4 ranged from .21 to .32. Standardized mean differences in Grade 8 ranged from .16 to .19.

Analysis of Social Studies Materials, Grade 11, Skills Summary			
Test or Skill	**Trend 2001–2007**		**Comparison to National Norm**
Analysis of Social Studies Materials Test	11	Decrease	Much Above
Interpreting Information Skill	11	Decrease	Much Above
Analyzing Information Skill	11	Stable	Much Above
Evaluating Information Skill	11	Decrease	Above

Analysis of Social Studies Materials – Grade 11. The ITED Analysis of Social Studies Materials test had three skills: Interpreting Information, Analyzing Information, and Evaluating Information. These skills tests measured things like interpreting political cartoons or making inferences in the context of Social Studies content areas, but did not test the content areas themselves (as did the ITBS, in History, Geography, Economics, and Government and Society). Performance on both the Interpreting Information and Analyzing Information skills was much above the norm. Performance on the Interpreting Information and Evaluating Information skills declined across the years. Standardized mean differences for Interpreting Information ranged from .36 to .49, for Analyzing Information from .36 to .45, and for Evaluating Information from .30 to .45.

Alignment to Montana Content Standards. Montana has six Content Standards in Social Studies:

- Content Standard 1—Students access, synthesize, and evaluate information to communicate and apply social studies knowledge to real world situations.
- Content Standard 2—Students analyze how people create and change structures of power, authority, and governance to understand the operation of government and to demonstrate civic responsibility.
- Content Standard 3—Students apply geographic knowledge and skills (e.g., location, place, human/environment interactions, movement, and regions).

- Content Standard 4—Students demonstrate an understanding of the effects of time, continuity, and change on historical and future perspectives and relationships.
- Content Standard 5—Students make informed decisions based on an understanding of the economic principles of production, distribution, exchange, and consumption.
- Content Standard 6—Students demonstrate an understanding of the impact of human interaction and cultural diversity on societies.

Thus the Grade 11 test and its skill subtests aligns best with Content Standard 1. The Grade 4 and Grade 8 tests align best with Content Standards 2 (Government), 3 (Geography), 4 (History), 5 (Economics), and 6 (Society). Therefore, the ITBS Grades 4 and 8 skills are a more comprehensive match with the Montana Standards than the ITED Grade 11 test. Social Studies skills as measured by the ITBS and ITED were strengths (in some cases, a major strength) of Montana students. Grade 4 History and Geography results were particularly noteworthy, as were Grade 11 Analysis of Social Studies Materials skills in 2001 through 2004.

Science

Test and skill level results. The ITBS and ITED Science tests had different structures. The ITBS Science test had four content-area skills: Scientific Inquiry, Life Science, Earth and Space Science, and Physical Science. The ITED Science test was called Analysis of Science Materials. It provided content-area material for measuring skills about using that material: Interpreting Information, Analyzing and Evaluating Information, and Analyzing Scientific Investigations.

Science Skills Summary			
Test or Skill	**Trend 2001–2007**		**Comparison to National Norm**
Science Test	4	Stable	Much Above
	8	Stable	Above
Scientific Inquiry Skill	4	Increase	Much Above
	8	Stable	Above
Life Science Skill	4	Stable	Much Above
	8	Stable	Above
Earth & Space Science Skill	4	Stable	Above
	8	Stable	Above
Physical Science Skill	4	Stable	Above
	8	Stable	Above

Scientific Inquiry. Performance on the Scientific Inquiry skill in Grade 4 was much above the norm and increasing. Performance in Grade 8 was above the norm and remained stable. Standardized mean differences in Grade 4 ranged from .40 to .55. Standardized mean differences in Grade 8 ranged from .35 to .41.

Life Science. Performance on the Life Science skill in Grade 4 was much above the norm and stable. Performance in Grade 8 was above the norm and remained stable. Standardized mean differences in Grade 4 ranged from .36 to .44. Standardized mean differences in Grade 8 ranged from .23 to .30.

Earth and Space Science. Performance on the Earth and Space Science skill in both Grades 4 and 8 was above the norm and stable across the years. Standardized mean differences in Grade 4 ranged from .32 to .43. Standardized mean differences in Grade 8 ranged from .15 to .28.

Physical Science. Performance on the Physical Science skill in both Grades 4 and 8 was above the norm and stable across the years. Standardized mean differences in Grade 4 ranged from .22 to .29. Standardized mean differences in Grade 8 ranged from .29 to .40.

Analysis of Science Materials, Grade 11, Skills Summary			
Test or Skill	**Trend 2001–2007**		**Comparison to National Norm**
Analysis of Science Materials Test	11	Stable	Much Above
Interpreting Information Skill	11	Stable	Much Above
Analyzing & Evaluating Information Skill	11	Stable	Much Above
Analyzing Scientific Investigations Skill	11	Stable	Much Above

Analysis of Science Materials – Grade 11. The ITED Analysis of Science Materials test had three skills tests: Interpreting Information, Analyzing and Evaluating Information, and Analyzing Scientific Investigations. These measured skills like drawing conclusions from results or judging the appropriateness of a procedure in the context of Science content areas, but did not test the content areas themselves (as did the ITBS, in Life, Earth and Space, and Physical Science). Grade 11 performance on all three ITED Science skills tests was much above the norm and stable across the years. Standardized mean differences for Interpreting Information ranged from .46 to .53, for Analyzing and Evaluating Information from .35 to .43, and for Interpreting Information from .43 to .52.

Alignment to Montana Content Standards. Montana has six Science Content Standards:

- Content Standard 1—Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate results and reasonable conclusions of scientific investigations.
- Content Standard 2—Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.
- Content Standard 3—Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.
- Content Standard 4—Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth's systems and other objects in space.
- Content Standard 5—Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and societies.
- Content Standard 6—Students understand historical developments in science and technology.

Thus the Grade 4 and Grade 8 tests align best with Content Standards 1 (Inquiry Process), 2 (Physical Science), 3 (Life Science), and 4 (Earth and Space Science). Content Standards 5

(impact of science on society) and 6 (historical developments in science) are not directly measured. The Grade 11 Analysis of Scientific Materials skill that is most relevant to the Montana Science Content Standards is Analyzing Scientific Investigations, which relates to Content Standard 1 (Inquiry Process). Thus broadly speaking the Grades 4 and 8 Science tests are better matched to the Montana Science Content Standards than the Grade 11 Science test, although none are a perfect match.

Science skills as measured by the ITBS and ITED were strengths (in some cases, a major strength) of Montana students. Grade 4 Scientific Inquiry and Life Science results were particularly noteworthy, as were Grade 11 Interpreting Information and Analyzing Scientific Investigations results.

Using Reference/Source Material

Test and skill level results. The ITBS and ITED tested use of materials in both Social Studies and Science, and also in separate tests about using sources.

Maps and Diagrams Skills Summary			
Test or Skill	**Trend 2001–2007**		**Comparison to National Norm**
Maps and Diagrams Test	4	Stable	Much Above
	8	Stable	Above
Locate/Process Information Skill	4	Stable	Above
	8	Stable	Above
Interpret Information Skill	4	Stable	Much Above
	8	Stable	Above
Analyze Information Skill	4	Stable	Above
	8	Stable	Above

Maps and Diagrams Skill – Locate/Process Information. Grade 4 and Grade 8 performance on the Locate/Process Information skill was above the norm. Both grades remained stable throughout the years. Standardized mean differences in Grade 4 ranged from .33 to .40. Standardized mean differences in Grade 8 ranged from .27 to .36.

Maps and Diagrams Skill – Interpret Information. Grade 4 performance on the Interpret Information subtest was much above the norm. Grade 8 performance was above the norm. Performance in both grades was stable across the years. Standardized mean differences in Grade 4 ranged from .40 to .49. Standardized mean differences in Grade 8 ranged from .32 to .38.

Maps and Diagrams Skill – Analyze Information. Grade 4 and Grade 8 performance on the Analyze Information skill was above the norm. Both grades remained stable throughout the years. Standardized mean differences in Grade 4 ranged from .19 to .31. Standardized mean differences in Grade 8 ranged from .20 to .31.

Using Reference Materials Skills Summary			
Test or Skill	**Trend 2001–2007**		**Comparison to National Norm**
Reference Materials Test	4	Increase	Much Above
	8	Decrease	Above
Sources of Information Test	11	Decrease	Much Above
Using Reference Materials Skill	4	Increase	Above
	8	Decrease	Above
Using Sources Skill	11	Decrease	Much Above
Searching for Information Skill	4	Increase	Much Above
	8	Stable	Above
Using Search Results Skill	8	Stable	Above
Evaluating Sources Skill	11	Decrease	Much Above

Using Reference Materials. Grades 4 and 8 took the ITBS Using Reference Materials skills test, and Grade 11 took the ITED Using Sources skills test. Performance in Grade 4 increased across the years, and performance in Grade 8 and Grade 11 declined across the years. Performance in Grades 4 and 8 was above the norm, and in Grade 11 much above the norm. Standardized mean differences in Grade 4 ranged from .11 to .25. Standardized mean differences in Grade 8 ranged from .01 to .15. Standardized mean differences in Grade 11 ranged from .31 to .45.

Searching for Information. Grades 4 performance on the Searching for Information skill was much above the norm, and Grade 8 performance was above the norm. Performance in Grade 4 rose across the years. Performance in Grade 8 remained stable. Standardized mean differences in Grade 4 ranged from .30 to .45. Standardized mean differences in Grade 8 ranged from .10 to .23.

Using Search Results and Evaluating Sources. Grade 8 students took the ITBS Using Search Results skills test, and Grade 11 took the ITED Evaluating Sources skills test. While the content of these subtests is not strictly comparable, judging the quality of sources was measured in both subtests. Performance in Grade 8 was above the norm and stable across the years. Performance in Grade 11 was much above the norm but decreased across the years. Standardized mean differences in Grade 8 ranged from .16 to .27. Standardized mean differences in Grade 11 ranged from .27 to .45.

Alignment to Montana Content Standards. The Maps and Diagrams skills tested at Grades 4 and 8 by the ITBS are most relevant to Social Studies Content Area 3 (Geography), Benchmarks 1 and 2 (about maps). These were areas of strength for Montana Students

The Reference Materials skills tested at Grades 4, 8, and 11 are most relevant to the Library Media Standards, and more recently (April, 2008) to the new Library standards which have more of an Information Literacy focus. Montana had four Content Standards in Library Media during the years covered by these test results:

- Content Standard 1—Students understand an inquiry process including how to access, evaluate and use information.
- Content Standard 2—Students demonstrate an understanding of ethical, legal, and social responsibility in accessing, evaluating and using information, materials and technology.
- Content Standard 3—Students seek a variety of materials for independent learning and personal enjoyment, including the appreciation of literature and other creative expressions.
- Content Standard 4—Students distinguish among, evaluate and appropriately use current and emerging media and technologies in the inquiry process.

The information literacy skills measured by the ITBS and ITED are reflected in Content Standard 1 and Content Area 4 in these Standards that were in force during the test administration years. The Reference Materials skills were areas of strength for Montana students; therefore, the 2008 shift in focus for Library content standards to more of an information literacy perspective should be a very smooth transition for Montana students and teachers.

Conclusions

The author draws the following conclusions from the analyses in this report. The Montana Office of Public Instruction may be able to draw additional conclusions based on their knowledge of curriculum and instruction in the state or knowledge of changes in the student population over the years. Fifty skills in Grade 4, 54 skills in Grade 8, and 28 skills in Grade 11, in Reading, Language Arts, Mathematics, Science, Social Studies, and Reference Materials, are described in this report. The Technical Report and its Appendix give the details. The news is generally excellent. The following table summarizes performance.

Trend 2001-2007	**Much Above Norm** (by .40 S.D. or better)	**Above Norm** (by .10 - .39 S.D.)	**At Norm**
Increasing	Grade 4 – 5 skills	Grade 4 – 15 skills Grade 8 – 4 skills Grade 11 – 1 skill	Grade 4 – 2 skills
Stable	Grade 4 – 6 skills Grade 11 – 9 skills	Grade 4 – 19 skills Grade 8 – 35 skills Grade 11 – 7 skills	 Grade 8 – 14 skills Grade 11 – 5 skills
Decreasing	 Grade 11 – 4 skills	Grade 4 – 3 skills Grade 8 – 1 skill Grade 11 – 2 skills	

Considering skills tested at all three grades (4, 8, and 11):

- Montana students scored above the norm on most skills (84% of the 132 skills tested).
- Montana students' skills were mostly stable from 2001 to 2007 (72%) or increasing (20%). Only 8% of tested skills decreased.
- Dividing skills crassly into "good news" and "acceptable" – with "good news" skills being anything much above the norm, or anything above the norm that is stable or increasing, and "acceptable" skills being those above the norm but decreasing or at the norm, an interesting pattern emerges. The "acceptable" skills totaled only 27 out of 132

(21%), and *all but three* of those were rote or mechanics-type skills (spelling, capitalization, punctuation, math computation) that are not well aligned with the Montana Content and Performance Standards.

- The skills measured by the ITBS and ITED represent a subset of the educational goals embodied in the Montana Content and Performance Standards. The content area where the ITBS and ITED aligned best was Mathematics. The content area where the ITBS and ITED aligned least was Language Arts; tested skills were mostly about the mechanics of writing and editing.

Looking at the three grades separately (See Skills Lists on pages 25 to 27):

- Grade 4's performance stood out. Of the 50 skills tested, five of them (10%) were both much above the norm (.40 of a standard deviation or more) and increasing. These were across the curriculum: Analysis and Generalization in Reading, Geometry, Scientific Inquiry and Life Science, and the skill of Searching for Information. An additional 6 skills (again across the curriculum and including some Social Studies skills) were much above the norm and stable.
- A dramatic increase happened in Grade 4 Mathematics, beginning in 2005. This increase was more than twice the size of any other increase for any grade or skill. The same pattern was observed in more than half of Mathematics skills (8 out of 15 tested, 53%) in Grade 4. Five of the remaining 7 skills also increased, although less dramatically. All told, something has been happening with Grade 4 Mathematics, especially in the years 2005-2007.
- Grade 11's performance stood out, although it included some mixed messages. While students performed much above the norm on almost half of its skills (13 out of 28 tested, 46%), four of those were decreasing. These four were more about processing information than knowledge of facts: Appropriateness of (written) Expression, Interpreting Information in Social Studies, Using Sources, and Evaluating Sources.
- Grade 8's performance was solid, mostly (40 out of 54 skills tested, 74%) above the norm (by .10 to .40 of a standard deviation).

Looking at particular skills according to their levels relative to national norms and trends (see the table below this summary for a complete list):

Good News

- Skills that were ***increasing and much above the national norm*** are particularly noteworthy. In this category were five skills in reading, mathematics, science, and reference in Grade 4.
- Skills that were ***stable and much above the national norm*** are similarly noteworthy. Both Grades 4 and 11 had skills in this category. Most of these were Grade 4 History and Geography and Grade 11 Reading, Mathematics, and Science skills.
- Skills that were ***decreasing and much above the national norm*** send mixed messages. Most of these were Grade 11 reference and interpretation skills.
- Skills that were ***increasing and above the national norm*** send a positive message about achievement. Noteworthy in this category were a large number of Mathematics skills at all three grades, 4, 8 and 11.
- Skills that were ***stable and above the national norm*** also send a positive message, and about half of the tested skills were in this category. All subjects (Reading, Language

Arts, Mathematics, Social Studies, Science, and Reference) were represented among these skills, and all three grade levels. All Grade 8 Reading skills were in this category. If one had to characterize the Montana 2001-2007 ITBS/ITED skills performance in one phrase, it would be this one: stable and above the national norm.

Acceptable

- Skills that were ***decreasing and above the national norm*** send mixed messages. Three of these were Grade 4 capitalization skills.
- Only two skills were ***increasing and at the national norm***. Both were Grade 4 Math Computation skills (multiply and divide with whole numbers).
- Skills that were ***stable and at the national norm*** are, of course, "normal." Most of these were Grade 8 and 11 memory or mechanics skills (spelling, capitalization, punctuation, math computation).

The conclusions in this report apply to results for the state overall. An analysis at the state level masks any differences by region, district, socio-economic status, or other demographics.

It is not possible to conclude from these analyses whether the overall strong performance demonstrated by Montana students on the ITBS and ITED for 2001-2007 was a result of the quality of curriculum and instruction, the background and abilities of the students, or both. Realistically, it is likely that both the schools and the students contributed.

And finally, at the risk of oversimplifying a large amount of important information, the analyst offers as recommendations that OPI investigate two questions. They are not meant to substitute for OPI's own reading of the results and represent the analyst's interpretations. It is the analyst's interpretation that the two most salient patterns in the data lead to the following questions:

1. From a curriculum perspective, it would be useful to understand what caused the dramatic increase in Grade 4 mathematics skills. What happened in Grade 4 Mathematics, beginning in 2004-2005?

2. From a curriculum perspective, it would be useful to understand why most of the skills for which Montana students are "merely" at the norm were rote memory and mechanics skills. Does this represent a curriculum philosophy of encouraging higher order thinking and subordinating mechanical skills? Does this represent the effects of the Montana Content Standards on curriculum choices? Or is it merely how students with overall above-the-norm scholastic aptitudes test out? More information about how the Montana Content Standards are being used might help with this question.

Summary of Grade 4 ITBS Skill Levels and Trends 2001-2007			
Trend 2001-2007	**Much Above Norm (by ≥ .40 S.D.)**	**Above Norm (by .10 - .39 S.D.)**	**At Norm**
Increasing	Reading, Analysis and Generalization Geometry Scientific Inquiry Life Science Searching for Information	Vocabulary Spelling, Words with Affixes Correct Spelling Number Properties & Operations Algebra Measurement Probability & Statistics Estimation Multiple Step Problems Read Amounts Compare Quantities & Interpret Relationships & Trends Add with Whole Numbers Subtract with Whole Numbers Government & Society Using Reference Materials	Multiple with Whole Numbers Divide with Whole Numbers
Stable	Reading, Inference and Interpretation Nouns, Pronouns & Modifiers Verbs History Geography Maps & Diagrams, Interpret Info	Reading, Factual Understanding Spelling, Root Words Cap., Place Names Cap., Names of Orgs. & Groups Overcapitalization/Correct Cap. End Punctuation Comma Apostrophes, Quotation Marks, Colons, Semicolons Correct Punctuation Conciseness & Clarity Organization of Ideas Appropriate Use Single Step Problems Math P-S, Approaches & Procedures Economics Earth & Space Science Physical Science Maps & Diagrams, Locate/Process Info Maps & Diagrams, Analyze Info	
Decreasing		Cap., Names & Titles Cap., Dates & Holidays Cap., Writing Conventions	

Summary of Grade 8 ITBS Skill Levels and Trends 2001-2007			
Trend 2001-2007	**Above Norm (by .10 - .39 S.D.)**		**At Norm**
Increasing	Number Properties & Operations Geometry Probability & Statistics Interpret Relationships & Trends		
Stable	Vocabulary Reading, Factual Understanding Reading, Inference & Interpretation Reading, Analysis & Generalization Cap., Names Titles Dates Holidays Cap. Place Names Cap. Names of Orgs & Groups End Punctuation Comma Apostrophes, Quotation Marks, Colons, Semicolons Nouns, Pronouns & Modifiers Verbs Conciseness & Clarity Organization of Ideas Appropriate Use Algebra Measurement Multiple Step Problems P-S Approaches & Procedures Read Amounts Compare Quantities Add & Subtract with Fractions	History Geography Economics Government & Society Scientific Inquiry Life Science Earth & Space Science Physical Science Maps & Diagrams, Locate/Process Information Maps & Diagrams, Interpret Information Maps & Diagrams, Analyze Information Searching for Information Using Search Results	Spelling, Root Words Spelling, Words with Affixes Correct Spelling Cap., Writing Conventions Overcapitalization Correct Capitalization Correct Punctuation Estimation Compute with Whole Numbers Multiply with Fractions Divide with Fractions Add & Subtract with Decimals Multiple with Decimals Divide with Decimals
Decreasing	Using Reference Materials		

Summary of Grade 11 ITED Skill Levels and Trends 2001-2007			
Trend 2001-2007	**Much Above Norm (by ≥ .40 S.D.)**	**Above Norm (by .10 - .39 S.D.)**	**At Norm**
Increasing		Math Computation, Integers	
Stable	Reading, Factual Understanding Reading, Inference & Interpretation Reading, Analysis & Generalization Concepts & Procedures Data Interpretation S.S., Analyzing Information Sci., Interpreting Information Sci., Analyzing & Evaluating Information Analyzing Scientific Investigations	Vocabulary Spelling Capitalization & Punctuation Usage & Grammar Organization of Ideas Math, Problem Solving Algebraic Manipulations	Spelling, Root Words Spelling, Words with Affixes Correct Spelling Math Computation, Decimals/Percents Math Computation, Fractions
Decreasing	Appropriateness of Expression S.S., Interpreting Information Using Sources Evaluating Sources	Sentence Structure S.S., Evaluating Information	

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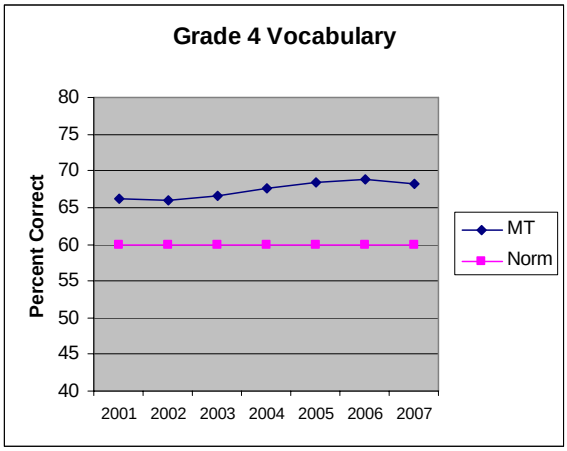
APPENDIX
Graphs and Tables, Presenting Results by Grade and Year for Each Skill

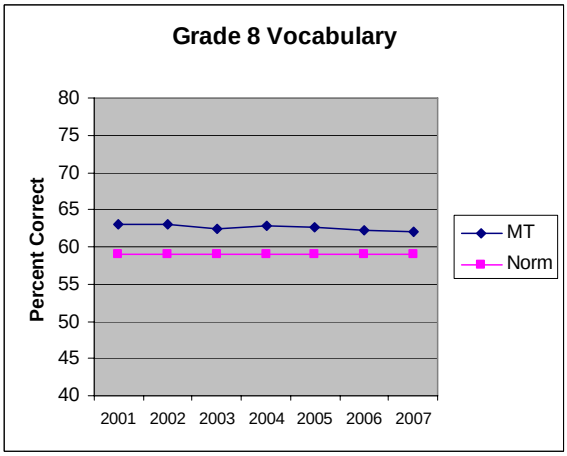
Table of Contents

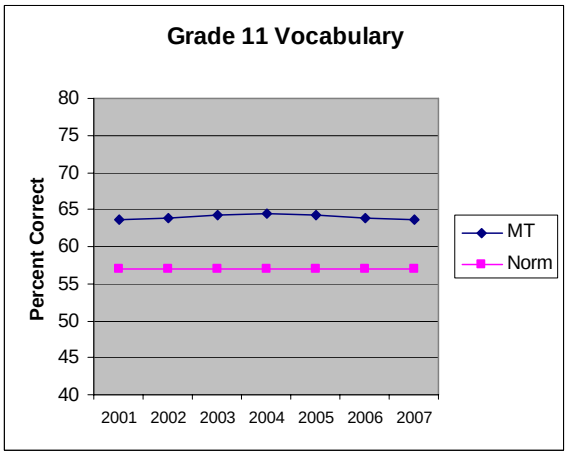
NOTE: In the tables below, scores are reported as proportions. So, for example, the mean Grade 4 Vocabulary score for 2001 was .66: students got 66% of the Vocabulary items correct. The norm was .60: the national norm was that students got 60% of the Vocabulary items correct.

Standardized mean differences are given as amount above (or below) the norm, expressed in standard deviation units. These are then interpreted according to Cohen (1988) as indicating no, "small," or "medium" (none were "large") differences from the norm. Note that even a "small" difference *is* a noticeable difference.

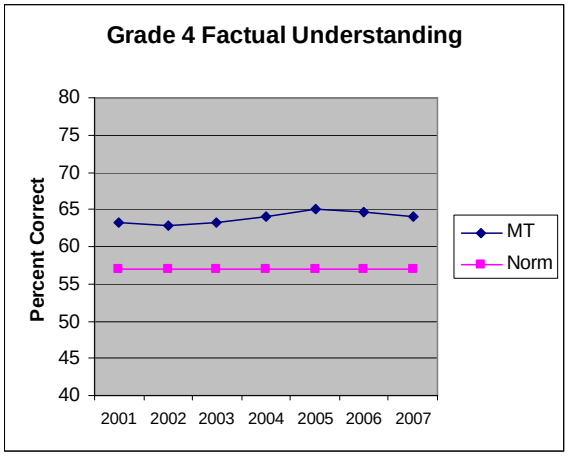
Vocabulary							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,502	.66	.21	.60	.30	Small
	2002	11,420	.66	.21	.60	.29	Small
	2003	10,752	.67	.21	.60	.32	Small
	2004	10,637	.68	.20	.60	.38	Small
	2005	10.356	.68	.20	.60	.41	Medium
	2006	10,456	.69	.20	.60	.43	Medium
	2007	10,060	.68	.20	.60	.41	Medium
Grade 8	2001	12,203	.63	.19	.59	.22	Small
	2002	11,999	.63	.19	.59	.21	Small
	2003	11,821	.63	.19	.59	.19	Small
	2004	12,116	.63	.19	.59	.20	Small
	2005	11,696	.63	.19	.59	.20	Small
	2006	11,812	.62	.19	.59	.17	Small
	2007	10,984	.62	.19	.59	.17	Small
Grade 11	2001	11,091	.64	.22	.57	.31	Small
	2002	11,174	.64	.21	.57	.31	Small
	2003	11,128	.64	.22	.57	.33	Small
	2004	11,088	.65	.22	.57	.34	Small
	2005	10,887	.64	.22	.57	.33	Small
	2006	10,755	.64	.22	.57	.31	Small
	2007	10,978	.64	.22	.57	.30	Small

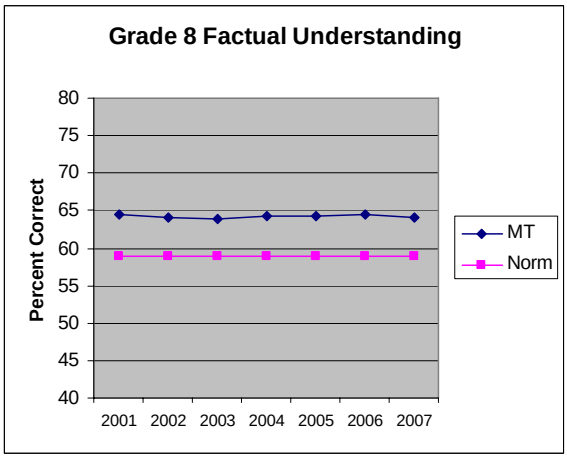


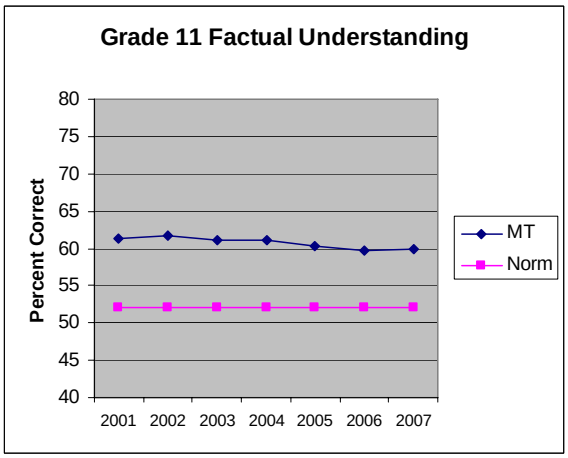




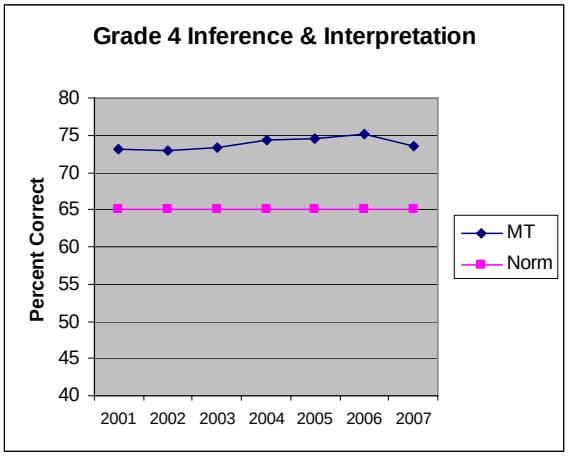
Reading Comprehension Skill – Factual Understanding							
	Year	N	Mean	S.D.	Norm	Std. Mean Difference	Strength
Grade 4	2001	11,487	.63	.21	.57	.30	Small
	2002	11,390	.63	.21	.57	.28	Small
	2003	10,737	.63	.21	.57	.30	Small
	2004	10,632	.64	.21	.57	.34	Small
	2005	10,348	.65	.21	.57	.39	Small
	2006	10,436	.65	.21	.57	.37	Small
	2007	10,043	.64	.21	.57	.34	Small
Grade 8	2001	12,180	.65	.21	.59	.27	Small
	2002	11,981	.64	.21	.59	.25	Small
	2003	11,818	.64	.21	.59	.23	Small
	2004	12,107	.64	.20	.59	.26	Small
	2005	11,680	.64	.21	.59	.25	Small
	2006	11,805	.65	.21	.59	.26	Small
	2007	10,978	.64	.21	.59	.24	Small
Grade 11	2001	11,090	.61	.23	.52	.42	Medium
	2002	11,194	.62	.22	.52	.43	Medium
	2003	11,125	.61	.22	.52	.41	Medium
	2004	11,088	.61	.22	.52	.41	Medium
	2005	10,912	.60	.23	.52	.37	Small
	2006	10,768	.60	.23	.52	.34	Small
	2007	10,973	.60	.23	.52	.35	Small

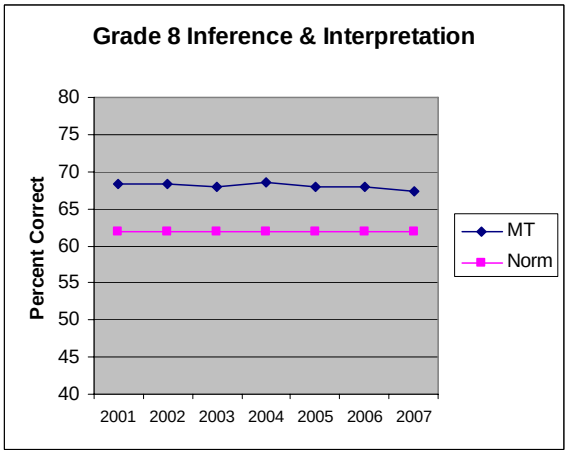


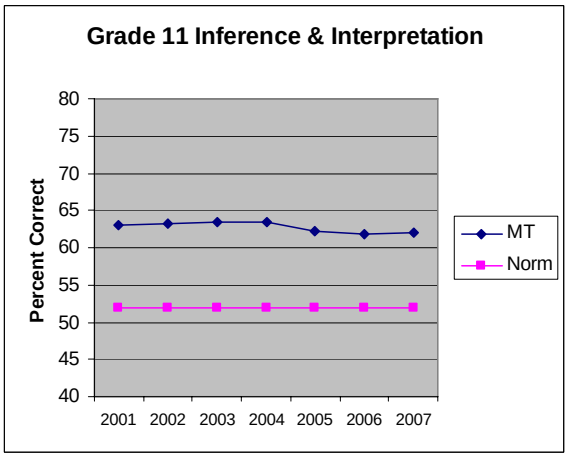




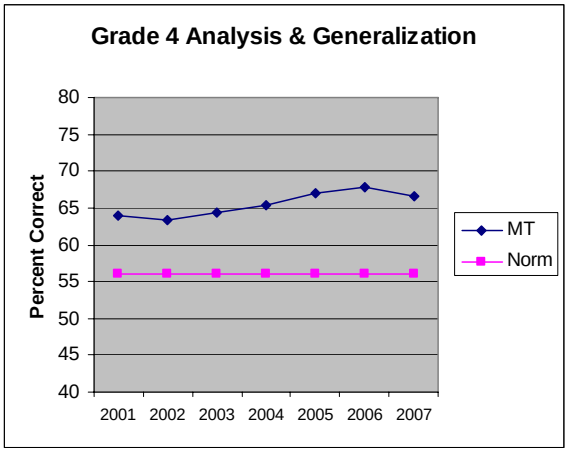
Reading Comprehension Skill – Inference and Interpretation							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,487	.73	.20	.65	.41	Medium
	2002	11,390	.73	.21	.65	.39	Small
	2003	10,737	.73	.20	.65	.41	Medium
	2004	10,632	.74	.20	.65	.46	Medium
	2005	10,348	.75	.20	.65	.47	Medium
	2006	10,436	.75	.20	.65	.50	Medium
	2007	10,043	.74	.21	.65	.43	Medium
Grade 8	2001	12,180	.68	.22	.62	.29	Small
	2002	11,981	.68	.22	.62	.29	Small
	2003	11,818	.68	.22	.62	.28	Small
	2004	12,107	.69	.21	.62	.30	Small
	2005	11,680	.68	.22	.62	.27	Small
	2006	11,805	.68	.22	.62	.27	Small
	2007	10,978	.67	.22	.62	.25	Small
Grade 11	2001	11,090	.63	.25	.52	.44	Medium
	2002	11,194	.63	.25	.52	.45	Medium
	2003	11,125	.63	.25	.52	.46	Medium
	2004	11,088	.63	.25	.52	.45	Medium
	2005	10,912	.62	.25	.52	.41	Medium
	2006	10,768	.62	.26	.52	.40	Medium
	2007	10,973	.62	.25	.52	.40	Medium

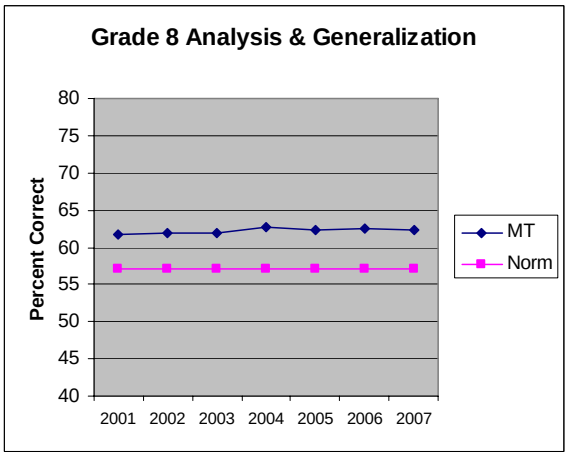


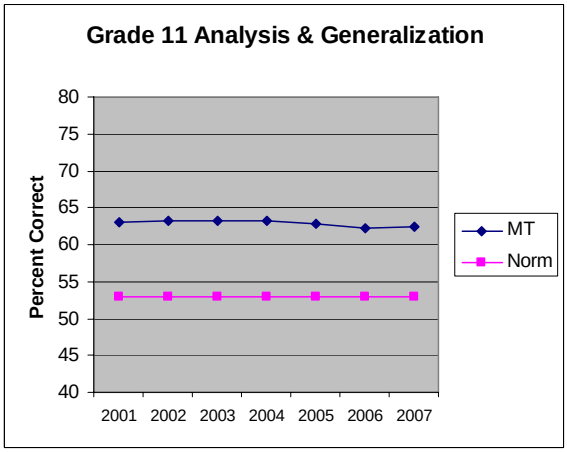




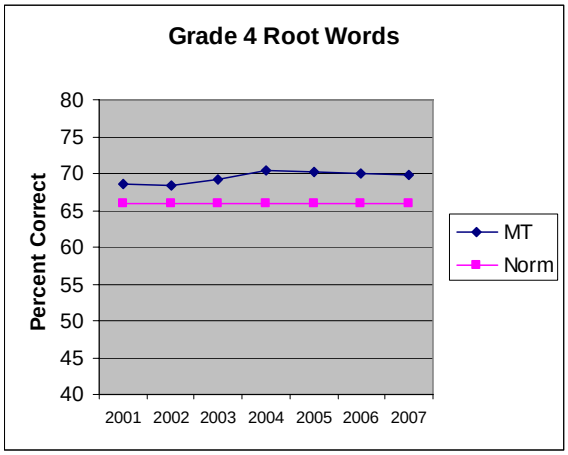
Reading Comprehension Skill – Analysis and Generalization							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,487	.64	.23	.56	.34	Small
	2002	11,390	.63	.23	.56	.32	Small
	2003	10,737	.64	.23	.56	.37	Small
	2004	10,632	.65	.23	.56	.41	Medium
	2005	10,348	.67	.23	.56	.48	Medium
	2006	10,436	.68	.23	.56	.52	Medium
	2007	10,043	.67	.23	.56	.46	Medium
Grade 8	2001	12,180	.62	.21	.57	.23	Small
	2002	11,981	.62	.22	.57	.23	Small
	2003	11,818	.62	.22	.57	.23	Small
	2004	12,107	.63	.21	.57	.27	Small
	2005	11,680	.62	.21	.57	.25	Small
	2006	11,805	.63	.21	.57	.26	Small
	2007	10,978	.62	.22	.57	.25	Small
Grade 11	2001	11,090	.63	.22	.53	.45	Medium
	2002	11,194	.63	.22	.53	.46	Medium
	2003	11,125	.63	.22	.53	.47	Medium
	2004	11,088	.63	.22	.53	.47	Medium
	2005	10,912	.63	.22	.53	.44	Medium
	2006	10,768	.62	.22	.53	.42	Medium
	2007	10,973	.62	.22	.53	.43	Medium

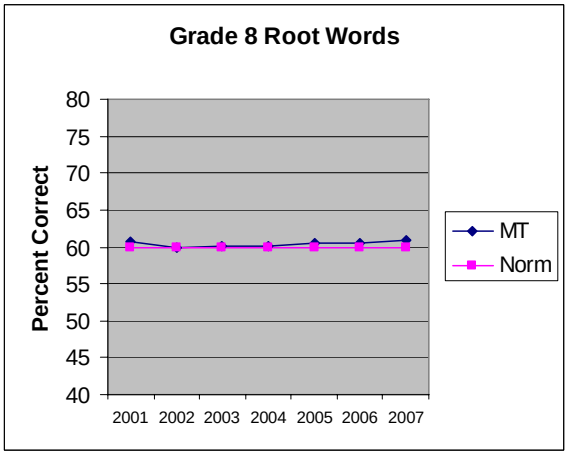


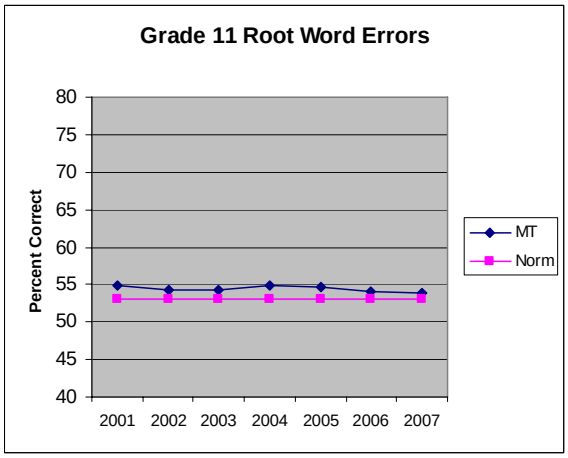




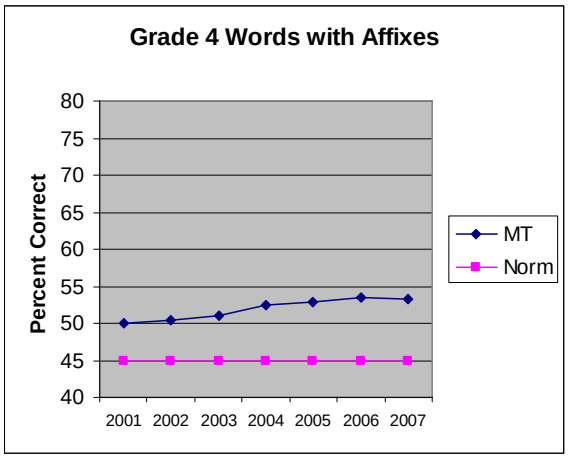
Spelling Skill – Root Words							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,524	.69	.22	.66	.12	Small
	2002	11,439	.68	.22	.66	.11	Small
	2003	10,775	.69	.22	.66	.15	Small
	2004	10,642	.70	.22	.66	.20	Small
	2005	10,365	.70	.22	.66	.19	Small
	2006	10,459	.70	.22	.66	.19	Small
	2007	10,059	.70	.22	.66	.17	Small
Grade 8	2001	12,194	.61	.21	.60	.03	No
	2002	11,988	.60	.21	.60	-.01	No
	2003	11,812	.60	.21	.60	.01	No
	2004	12,116	.60	.21	.60	.01	No
	2005	11,693	.61	.21	.60	.02	No
	2006	11,813	.62	.21	.60	.03	No
	2007	10,972	.61	.21	.60	.05	No
Grade 11	2001	11,018	.55	.24	.53	.08	No
	2002	11,201	.54	.24	.53	.05	No
	2003	11,103	.54	.24	.53	.06	No
	2004	11,066	.55	.24	.53	.08	No
	2005	10,889	.55	.24	.53	.07	No
	2006	10,747	.54	.24	.53	.04	No
	2007	10,979	.54	.23	.53	.04	No

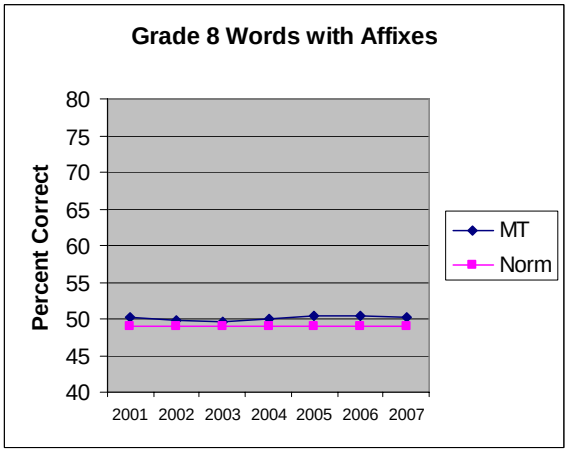


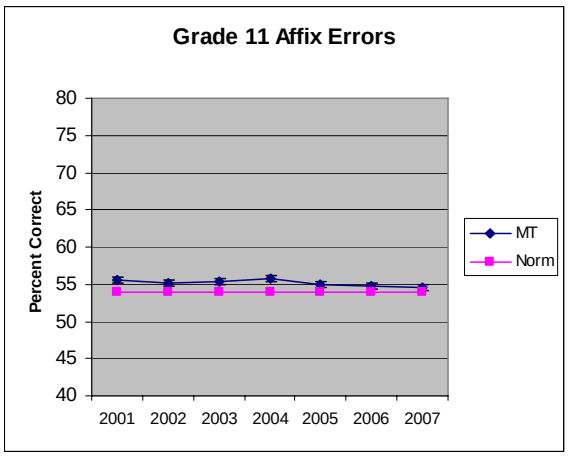




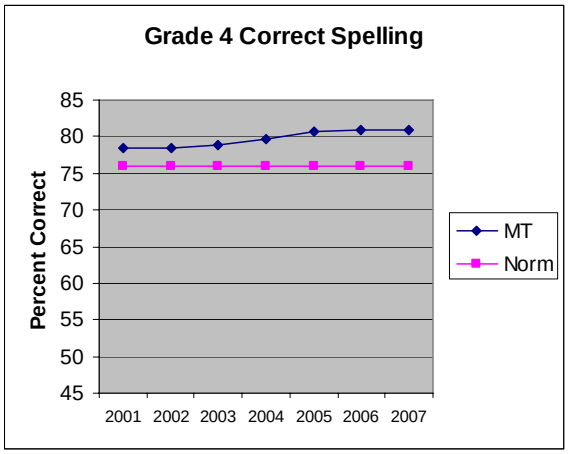
Spelling Skill – Words with Affixes							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,524	.50	.27	.45	.19	Small
	2002	11,439	.51	.27	.45	.20	Small
	2003	10,775	.51	.27	.45	.23	Small
	2004	10,642	.52	.27	.45	.28	Small
	2005	10,365	.53	.27	.45	.29	Small
	2006	10,459	.54	.27	.45	.32	Small
	2007	10,059	.53	.27	.45	.31	Small
Grade 8	2001	12,194	.50	.24	.49	.05	No
	2002	11,988	.50	.24	.49	.04	No
	2003	11,812	.50	.24	.49	.02	No
	2004	12,116	.50	.24	.49	.04	No
	2005	11,693	.50	.24	.49	.06	No
	2006	11,813	.51	.24	.49	.06	No
	2007	10,972	.50	.24	.49	.05	No
Grade 11	2001	11,018	.56	.22	.54	.07	No
	2002	11,201	.55	.22	.54	.06	No
	2003	11,103	.55	.22	.54	.06	No
	2004	11,066	.56	.22	.54	.08	No
	2005	10,889	.55	.22	.54	.05	No
	2006	10,747	.55	.22	.54	.04	No
	2007	10,979	.55	.22	.54	.02	No

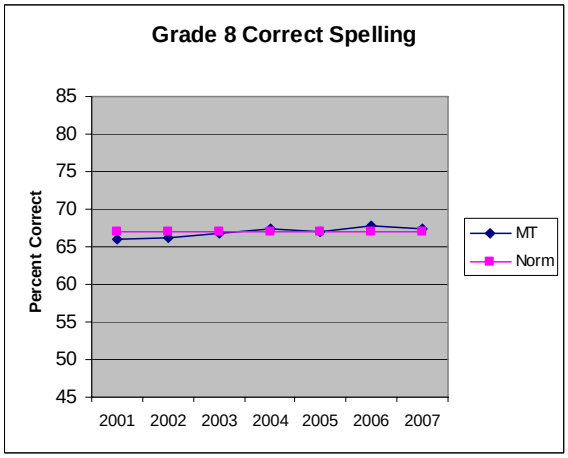


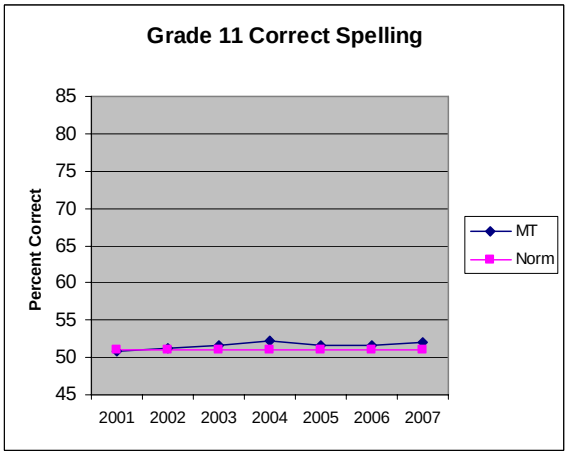




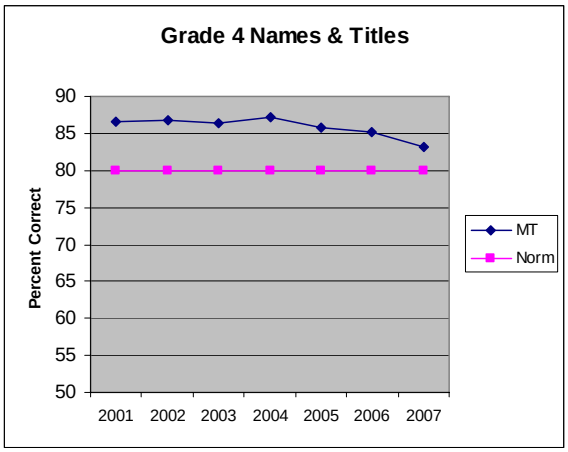
Spelling Skill – Correct Spelling							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,524	.78	.26	.76	.09	No
	2002	11,439	.79	.26	.76	.10	No
	2003	10,775	.79	.26	.76	.11	Small
	2004	10,642	.80	.25	.76	.14	Small
	2005	10,365	.81	.25	.76	.19	Small
	2006	10,459	.81	.25	.76	.19	Small
	2007	10,059	.81	.25	.76	.20	Small
Grade 8	2001	12,194	.66	.28	.67	-.03	No
	2002	11,988	.66	.28	.67	-.03	No
	2003	11,812	.67	.28	.67	-.01	No
	2004	12,116	.67	.28	.67	.02	No
	2005	11,693	.67	.28	.67	.00	No
	2006	11,813	.68	.28	.67	.03	No
	2007	10,972	.67	.28	.67	.02	No
Grade 11	2001	11,018	.51	.26	.51	-.01	No
	2002	11,201	.51	.26	.51	.01	No
	2003	11,103	.52	.26	.51	.02	No
	2004	11,066	.52	.26	.51	.05	No
	2005	10,889	.52	.26	.51	.02	No
	2006	10,747	.52	.26	.51	.02	No
	2007	10,979	.52	.26	.51	.04	No

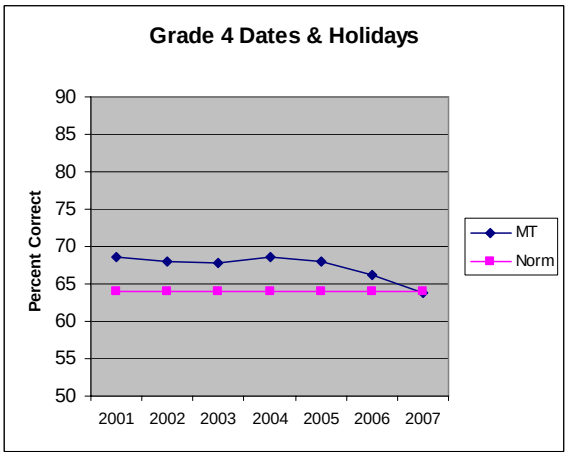


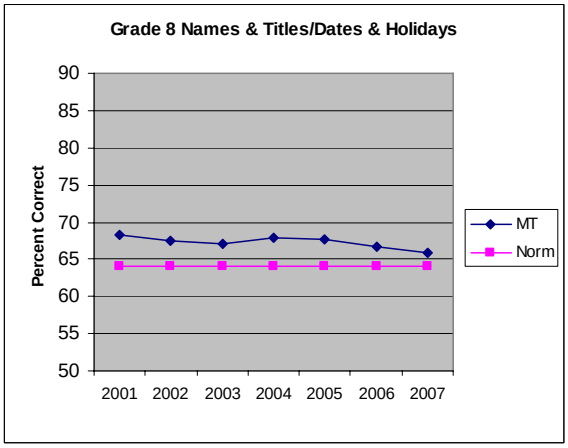




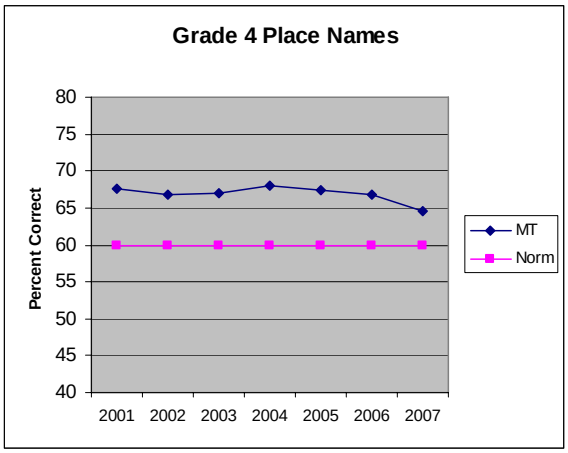
Capitalization Skill – Names and Titles, Dates and Holidays							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4 Names & Titles	2001	11,530	.87	.23	.80	.28	Small
	2002	11,442	.87	.23	.80	.29	Small
	2003	10,771	.86	.23	.80	.27	Small
	2004	10,642	.87	.22	.80	.31	Small
	2005	10,365	.86	.23	.80	.25	Small
	2006	10,452	.85	.24	.80	.22	Small
	2007	10,053	.83	.26	.80	.13	Small
Grade 4 Dates & Holidays	2001	11,530	.69	.31	.64	.14	Small
	2002	11,442	.68	.32	.64	.13	Small
	2003	10,771	.68	.32	.64	.12	Small
	2004	10,642	.69	.31	.64	.15	Small
	2005	10,365	.68	.31	.64	.12	Small
	2006	10,452	.66	.32	.64	.07	No
	2007	10,053	.64	.33	.64	-.00	No
Grade 8 Names & Titles, Dates & Holidays	2001	12,182	.68	.22	.64	.20	Small
	2002	11,986	.68	.22	.64	.15	Small
	2003	11,808	.67	.23	.64	.14	Small
	2004	12,113	.68	.22	.64	.17	Small
	2005	11,694	.68	.22	.64	.17	Small
	2006	11,809	.67	.23	.64	.12	Small
	2007	10,955	.66	.23	.64	.09	No

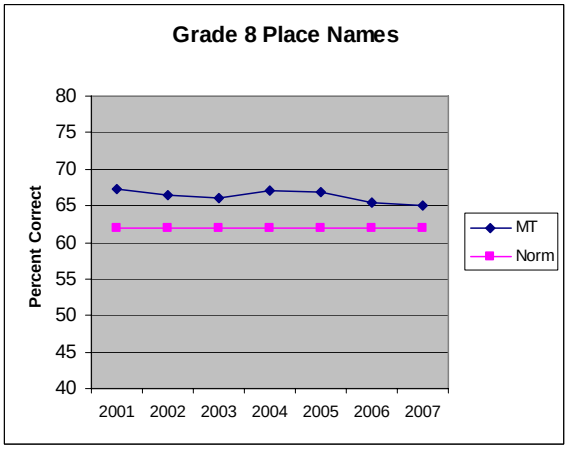




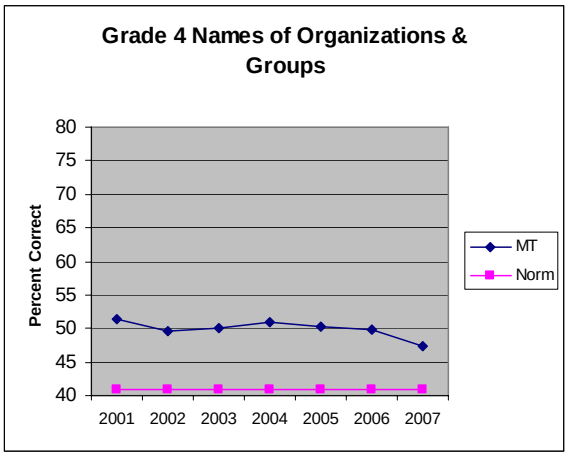


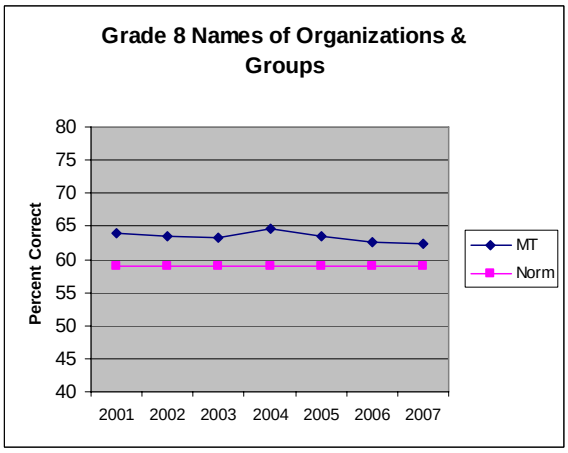
Capitalization Skill – Place Names							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,530	.68	.26	.60	.30	Small
	2002	11,442	.67	.25	.60	.27	Small
	2003	10,771	.67	.25	.60	.27	Small
	2004	10,642	.68	.25	.60	.32	Small
	2005	10,365	.68	.26	.60	.29	Small
	2006	10,452	.67	.26	.60	.27	Small
	2007	10,053	.65	.27	.60	.18	Small
Grade 8	2001	12,182	.67	.23	.62	.23	Small
	2002	11,986	.66	.23	.62	.19	Small
	2003	11,808	.66	.23	.62	.18	Small
	2004	12,113	.67	.23	.62	.22	Small
	2005	11,694	.67	.23	.62	.21	Small
	2006	11,809	.66	.23	.62	.15	Small
	2007	10,955	.65	.23	.62	.13	Small



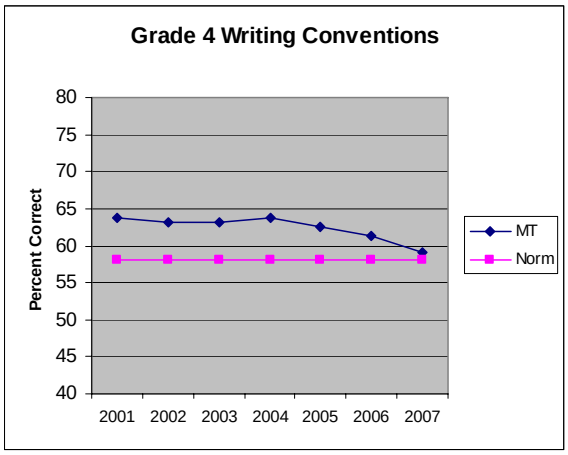


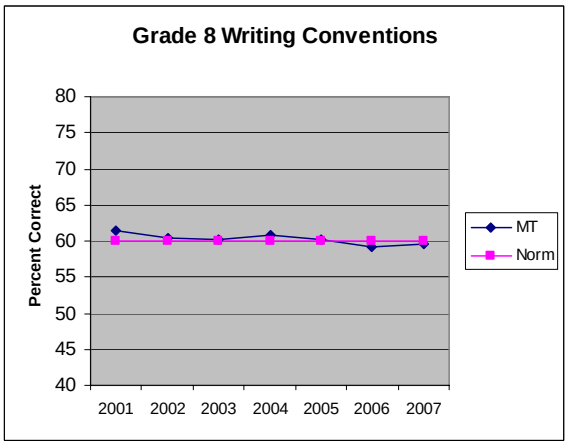
Capitalization Skill – Names of Organizations and Groups							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,530	.51	.30	.41	.34	Small
	2002	11,442	.50	.31	.41	.28	Small
	2003	10,771	.50	.31	.41	.30	Small
	2004	10,642	.51	.30	.41	.33	Small
	2005	10,365	.50	.30	.41	.31	Small
	2006	10,452	.50	.30	.41	.29	Small
	2007	10,053	.47	.30	.41	.21	Small
Grade 8	2001	12,182	.64	.22	.59	.23	Small
	2002	11,986	.64	.22	.59	.21	Small
	2003	11,808	.63	.22	.59	.20	Small
	2004	12,113	.65	.21	.59	.26	Small
	2005	11,694	.64	.22	.59	.21	Small
	2006	11,809	.63	.22	.59	.17	Small
	2007	10,955	.62	.22	.59	.16	Small



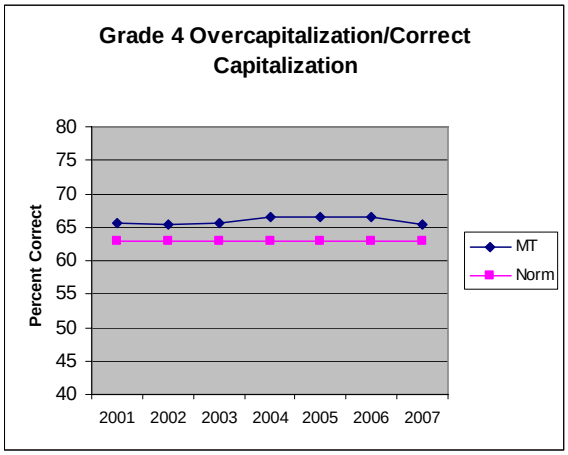


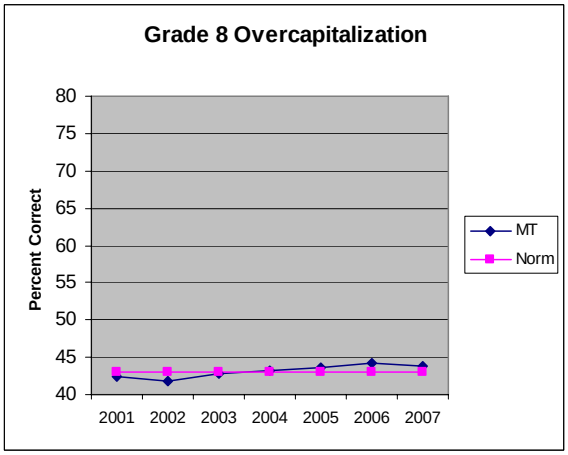
Capitalization Skill – Writing Conventions							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,530	.64	.25	.58	.24	Small
	2002	11,442	.63	.25	.58	.21	Small
	2003	10,771	.63	.25	.58	.21	Small
	2004	10,642	.64	.25	.58	.23	Small
	2005	10,365	.63	.25	.58	.18	Small
	2006	10,452	.61	.25	.58	.14	Small
	2007	10,053	.59	.26	.58	.05	No
Grade 8	2001	12,182	.61	.26	.60	.05	No
	2002	11,986	.61	.27	.60	.02	No
	2003	11,808	.60	.27	.60	.01	No
	2004	12,113	.61	.27	.60	.03	No
	2005	11,694	.60	.27	.60	.01	No
	2006	11,809	.59	.27	.60	-.03	No
	2007	10,955	.60	.27	.60	-.01	No

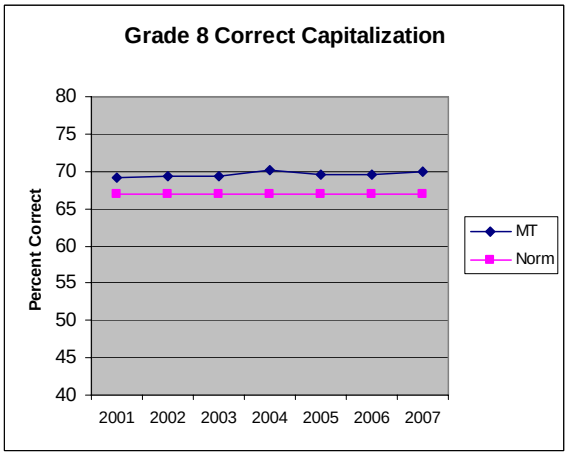




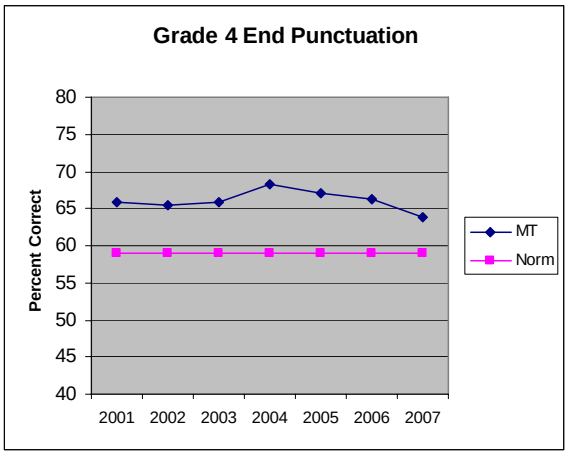
Capitalization Skill – Overcapitalization and Correct Capitalization							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4 Over-capitalization & Correct Capital-ization	2001	11,530	.66	.24	.63	.11	Small
	2002	11,442	.65	.24	.63	.10	Small
	2003	10,771	.66	.24	.63	.11	Small
	2004	10,642	.67	.24	.63	.15	Small
	2005	10,365	.67	.24	.63	.15	Small
	2006	10,452	.67	.24	.63	.15	Small
	2007	10,053	.65	.25	.63	.10	Small
Grade 8 Over-capitalization	2001	12,182	.42	.30	.43	-.02	No
	2002	11,986	.42	.29	.43	-.04	No
	2003	11,808	.43	.30	.43	-.00	No
	2004	12,113	.43	.30	.43	.01	No
	2005	11,694	.44	.30	.43	.02	No
	2006	11,809	.44	.30	.43	.04	No
	2007	10,955	.44	.31	.43	.03	No
Grade 8 Correct Capital-ization	2001	12,182	.69	.27	.67	.08	No
	2002	11,986	.69	.27	.67	.09	No
	2003	11,808	.69	.27	.67	.09	No
	2004	12,113	.70	.27	.67	.12	Small
	2005	11,694	.70	.27	.67	.10	Small
	2006	11,809	.70	.27	.67	.09	No
	2007	10,955	.70	.27	.67	.11	Small

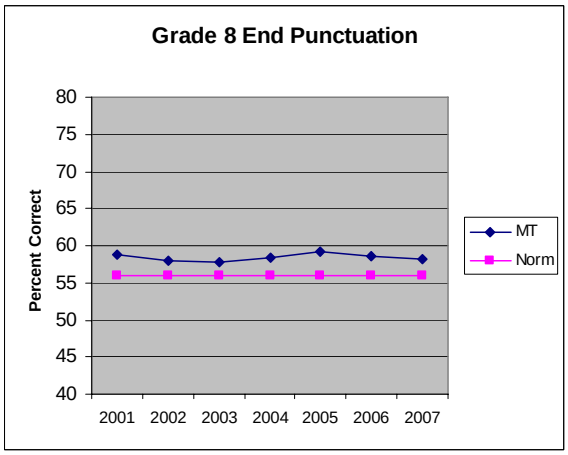




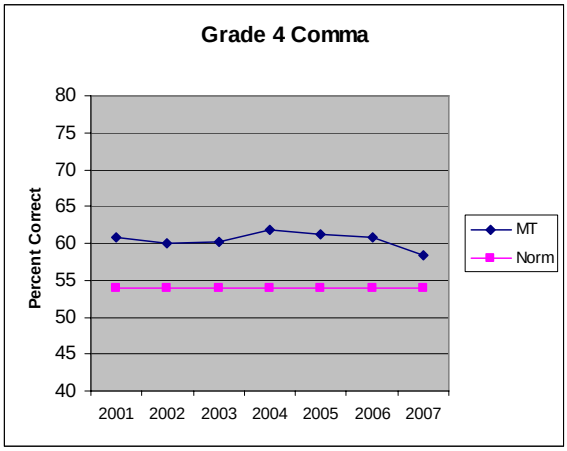


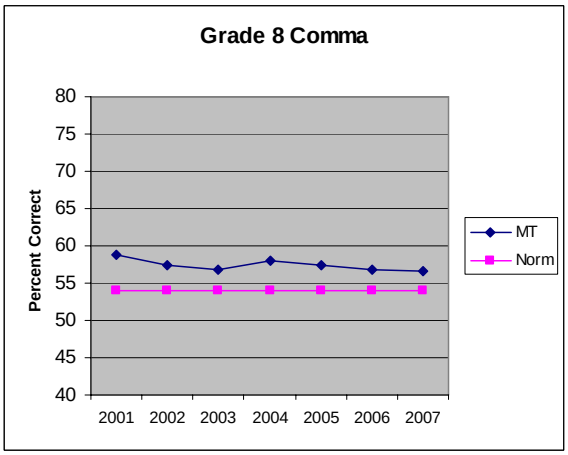
Punctuation Skill – End Punctuation							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,528	.66	.23	.59	.29	Small
	2002	11,438	.65	.24	.59	.27	Small
	2003	10,770	.66	.24	.59	.29	Small
	2004	10,641	.68	.23	.59	.39	Small
	2005	10,359	.67	.24	.59	.34	Small
	2006	10,445	.66	.24	.59	.31	Small
	2007	10,054	.64	.24	.59	.20	Small
Grade 8	2001	12,173	.59	.24	.56	.11	Small
	2002	11,979	.58	.24	.56	.08	No
	2003	11,808	.58	.24	.56	.08	No
	2004	12,103	.58	.24	.56	.10	Small
	2005	11,686	.59	.24	.56	.14	Small
	2006	11,806	.59	.24	.56	.11	Small
	2007	10,951	.58	.24	.56	.09	No



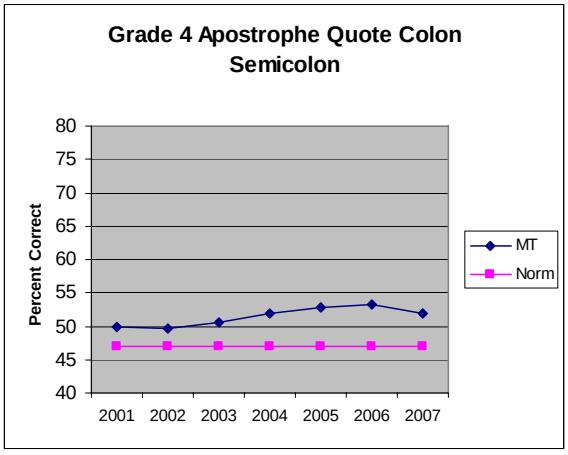


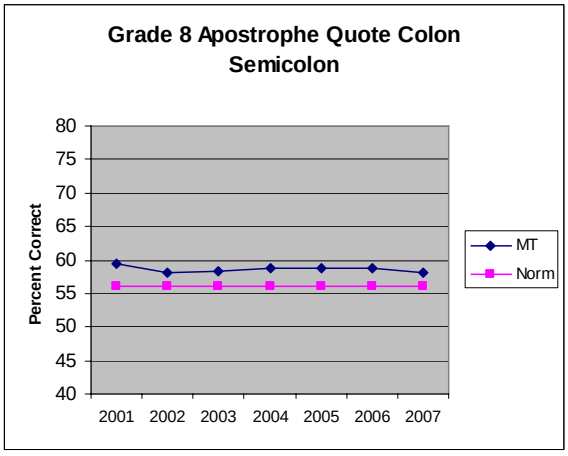
Punctuation Skill – Comma							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,528	.61	.25	.54	.27	Small
	2002	11,438	.60	.26	.54	.24	Small
	2003	10,770	.60	.26	.54	.25	Small
	2004	10,641	.62	.25	.54	.30	Small
	2005	10,359	.61	.26	.54	.28	Small
	2006	10,445	.61	.26	.54	.27	Small
	2007	10,054	.58	.27	.54	.17	Small
Grade 8	2001	12,173	.59	.24	.54	.21	Small
	2002	11,979	.58	.24	.54	.15	Small
	2003	11,808	.57	.24	.54	.12	Small
	2004	12,103	.58	.24	.54	.17	Small
	2005	11,686	.58	.24	.54	.15	Small
	2006	11,806	.57	.24	.54	.12	Small
	2007	10,951	.57	.24	.54	.11	Small



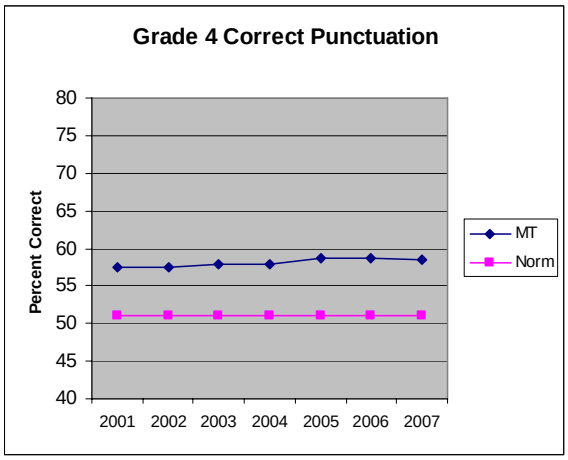


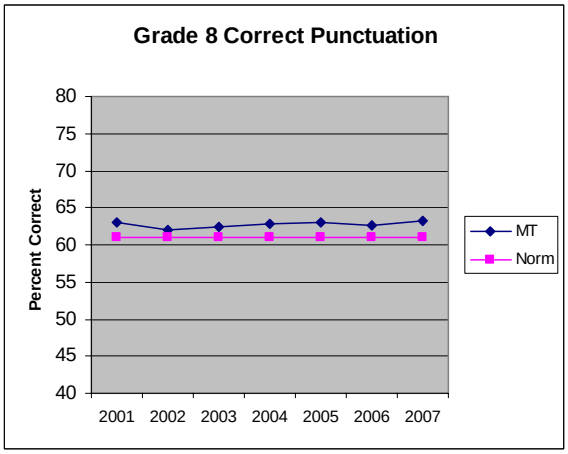
Punctuation Skill – Apostrophes/Quotation Marks/Colons/Semicolons							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,528	.50	.30	.47	.10	Small
	2002	11,438	.50	.30	.47	.09	No
	2003	10,770	.51	.30	.47	.12	Small
	2004	10,641	.52	.30	.47	.16	Small
	2005	10,359	.53	.30	.47	.19	Small
	2006	10,445	.53	.30	.47	.21	Small
	2007	10,054	.52	.31	.47	.16	Small
Grade 8	2001	12,173	.59	.21	.56	.16	Small
	2002	11,979	.58	.24	.56	.10	Small
	2003	11,808	.58	.22	.56	.11	Small
	2004	12,103	.59	.21	.56	.13	Small
	2005	11,686	.59	.22	.56	.13	Small
	2006	11,806	.59	.22	.56	.13	Small
	2007	10,951	.58	.22	.56	.09	No



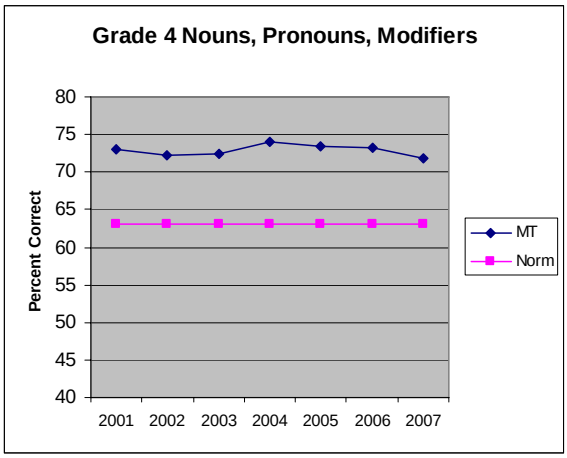


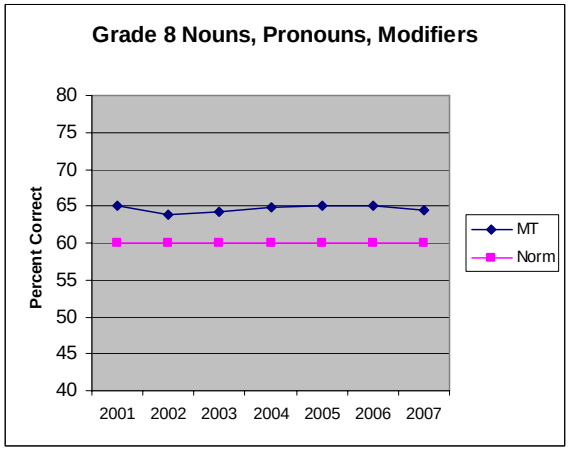
Punctuation Skill – Correct Punctuation							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,528	.58	.31	.51	.21	Small
	2002	11,438	.58	.31	.51	.21	Small
	2003	10,770	.58	.31	.51	.22	Small
	2004	10,641	.58	.31	.51	.22	Small
	2005	10,359	.59	.31	.51	.25	Small
	2006	10,445	.59	.31	.51	.25	Small
	2007	10,054	.59	.31	.51	.24	Small
Grade 8	2001	12,173	.63	.31	.61	.07	No
	2002	11,979	.62	.32	.61	.03	No
	2003	11,808	.63	.32	.61	.05	No
	2004	12,103	.63	.31	.61	.06	No
	2005	11,686	.63	.32	.61	.07	No
	2006	11,806	.63	.32	.61	.05	No
	2007	10,951	.63	.32	.61	.07	No



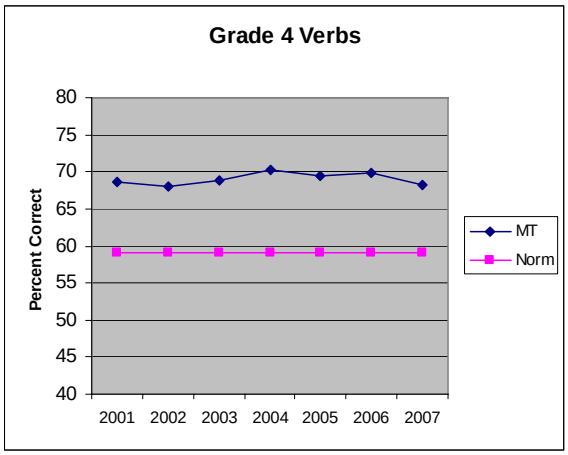


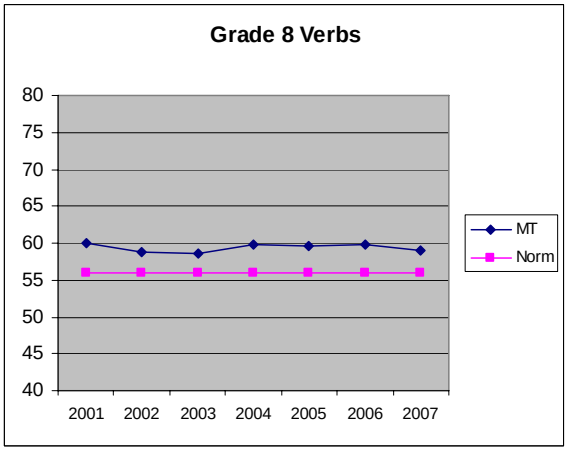
Usage and Expression Skill – Nouns, Pronouns, and Modifiers							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,526	.73	.23	.63	.44	Medium
	2002	11,442	.72	.23	.63	.40	Medium
	2003	10,762	.73	.23	.63	.42	Medium
	2004	10,635	.74	.22	.63	.49	Medium
	2005	10,360	.74	.23	.63	.46	Medium
	2006	10,444	.73	.22	.63	.45	Medium
	2007	10,050	.72	.23	.63	.39	Small
Grade 8	2001	12,171	.65	.21	.60	.24	Small
	2002	11,963	.64	.21	.60	.19	Small
	2003	11,795	.64	.21	.60	.21	Small
	2004	12,098	.65	.20	.60	.23	Small
	2005	11,684	.65	.21	.60	.24	Small
	2006	11,800	.65	.21	.60	.24	Small
	2007	10,943	.64	.21	.60	.21	Small



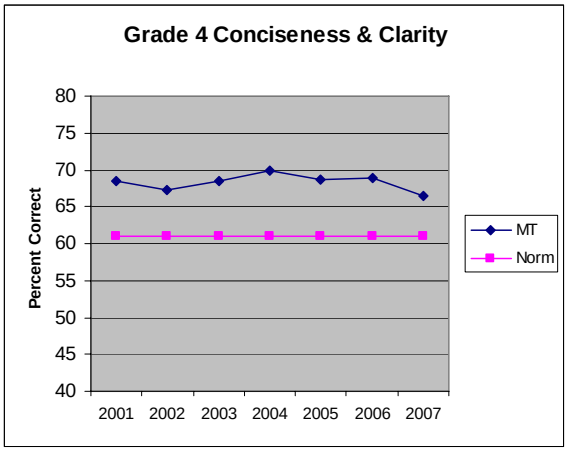


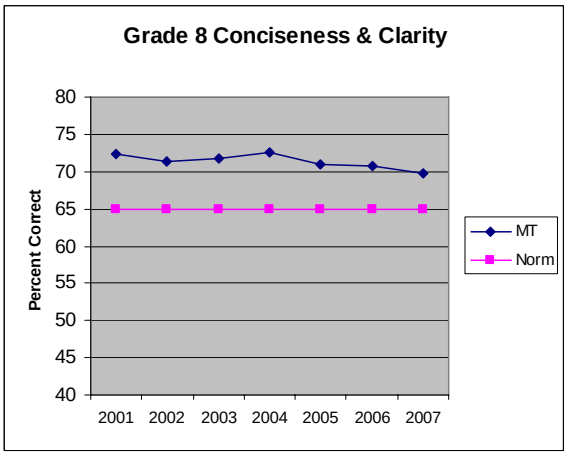
Usage and Expression Skill – Verbs							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,526	.69	.24	.59	.40	Medium
	2002	11,442	.68	.24	.59	.38	Small
	2003	10,762	.69	.24	.59	.41	Medium
	2004	10,635	.70	.24	.59	.46	Medium
	2005	10,360	.69	.24	.59	.43	Medium
	2006	10,444	.70	.24	.59	.45	Medium
	2007	10,050	.68	.25	.59	.38	Small
Grade 8	2001	12,171	.60	.26	.56	.16	Small
	2002	11,963	.59	.26	.56	.11	Small
	2003	11,795	.59	.26	.56	.10	Small
	2004	12,098	.60	.25	.56	.14	Small
	2005	11,684	.60	.26	.56	.14	Small
	2006	11,800	.60	.26	.56	.15	Small
	2007	10,943	.60	.26	.56	.11	Small



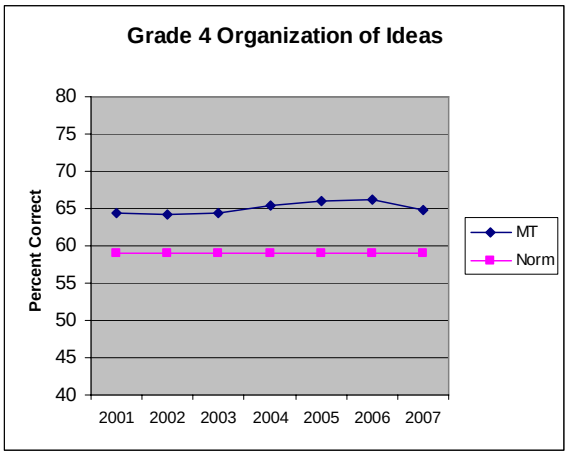


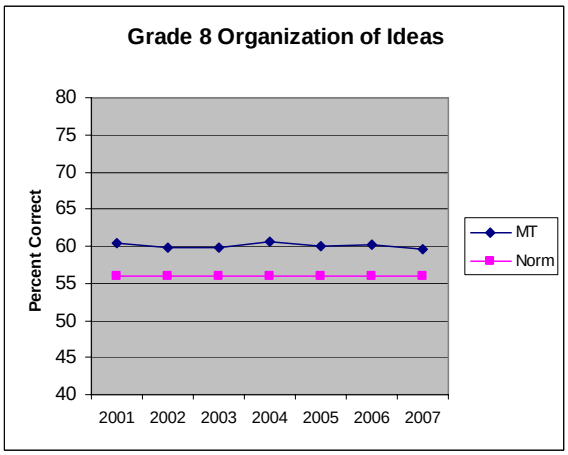
Usage and Expression Skill – Conciseness and Clarity							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,526	.69	.28	.61	.27	Small
	2002	11,442	.67	.28	.61	.23	Small
	2003	10,762	.68	.28	.61	.27	Small
	2004	10,635	.70	.27	.61	.32	Small
	2005	10,360	.69	.28	.61	.28	Small
	2006	10,444	.69	.28	.61	.28	Small
	2007	10,050	.66	.28	.61	.19	Small
Grade 8	2001	12,171	.72	.26	.65	.28	Small
	2002	11,963	.71	.26	.65	.24	Small
	2003	11,795	.72	.26	.65	.26	Small
	2004	12,098	.73	.26	.65	.29	Small
	2005	11,684	.71	.26	.65	.23	Small
	2006	11,800	.71	.26	.65	.22	Small
	2007	10,943	.70	.27	.65	.18	Small



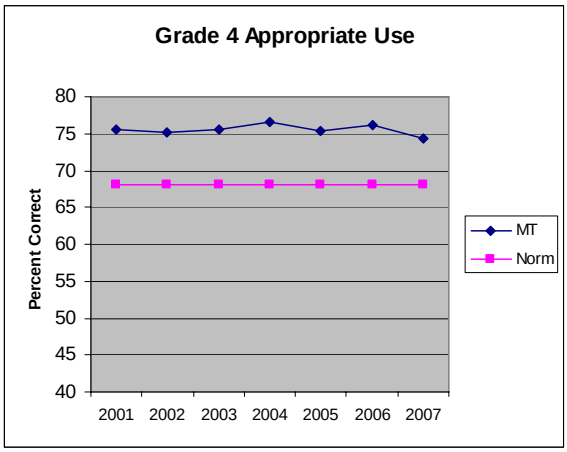


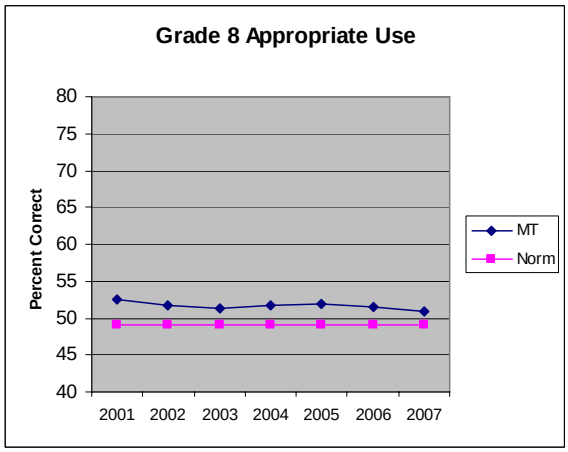
Usage and Expression Skill – Organization of Ideas							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,526	.65	.28	.59	.19	Small
	2002	11,442	.64	.29	.59	.19	Small
	2003	10,762	.65	.28	.59	.19	Small
	2004	10,635	.65	.28	.59	.23	Small
	2005	10,360	.66	.28	.59	.25	Small
	2006	10,444	.66	.28	.59	.26	Small
	2007	10,050	.65	.28	.59	.21	Small
Grade 8	2001	12,171	.60	.21	.56	.21	Small
	2002	11,963	.60	.21	.56	.18	Small
	2003	11,795	.60	.21	.56	.18	Small
	2004	12,098	.61	.21	.56	.22	Small
	2005	11,684	.60	.21	.56	.19	Small
	2006	11,800	.60	.21	.56	.20	Small
	2007	10,943	.60	.21	.56	.17	Small



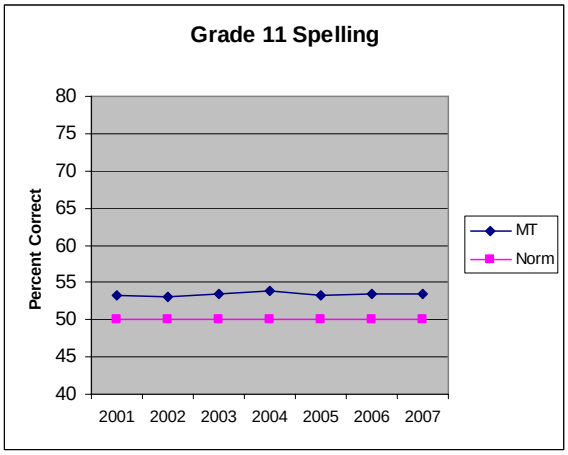


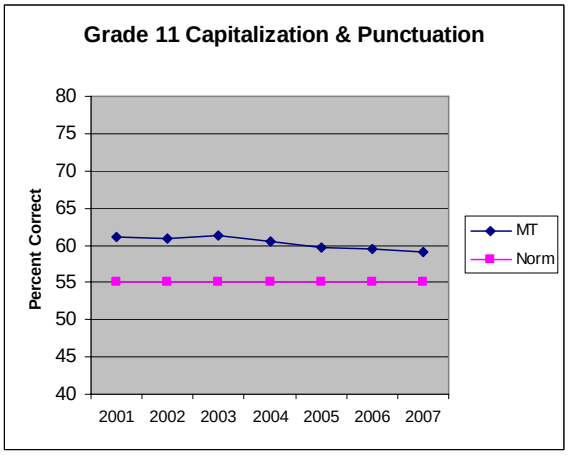
Usage and Expression Skill – Appropriate Use							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,526	.76	.22	.68	.34	Small
	2002	11,442	.75	.22	.68	.32	Small
	2003	10,762	.76	.22	.68	.34	Small
	2004	10,635	.77	.22	.68	.38	Small
	2005	10,360	.75	.22	.68	.34	Small
	2006	10,444	.76	.22	.68	.37	Small
	2007	10,050	.74	.23	.68	.28	Small
Grade 8	2001	12,171	.53	.21	.49	.17	Small
	2002	11,963	.52	.21	.49	.13	Small
	2003	11,795	.51	.21	.49	.11	Small
	2004	12,098	.52	.21	.49	.13	Small
	2005	11,684	.52	.21	.49	.14	Small
	2006	11,800	.52	.21	.49	.12	Small
	2007	10,943	.51	.21	.49	.09	No

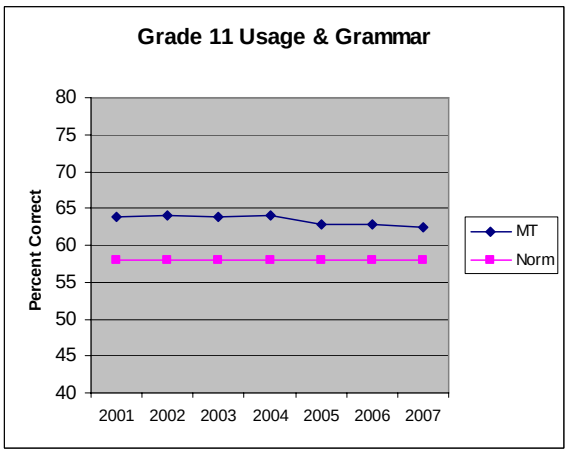




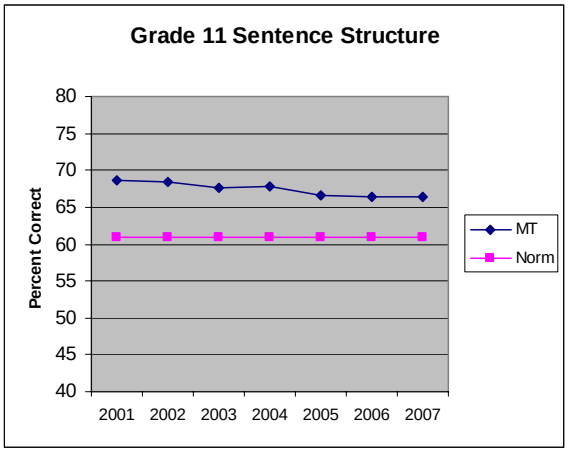
Language: Revising Written Materials Skills – Grade 11 Spelling, Capitalization and Punctuation, Usage and Grammar							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 11 Spelling	2001	11,089	.53	.27	.50	.12	Small
	2002	11,208	.53	.27	.50	.12	Small
	2003	11,122	.53	.27	.50	.13	Small
	2004	11,084	.54	.27	.50	.14	Small
	2005	10,910	.53	.27	.50	.12	Small
	2006	10,772	.53	.27	.50	.13	Small
	2007	10,976	.54	.27	.50	.13	Small
Grade 11 Capital-ization & Punctuation	2001	11,089	.61	.26	.55	.23	Small
	2002	11,208	.61	.26	.55	.23	Small
	2003	11,122	.61	.27	.55	.24	Small
	2004	11,084	.61	.26	.55	.21	Small
	2005	10,910	.60	.27	.55	.18	Small
	2006	10,772	.59	.27	.55	.17	Small
	2007	10,976	.59	.27	.55	.16	Small
Grade 11 Usage & Grammar	2001	11,089	.64	.23	.58	.26	Small
	2002	11,208	.64	.23	.58	.27	Small
	2003	11,122	.64	.23	.58	.25	Small
	2004	11,084	.64	.23	.58	.26	Small
	2005	10,910	.63	.23	.58	.21	Small
	2006	10,772	.63	.23	.58	.21	Small
	2007	10,976	.62	.23	.58	.19	Small

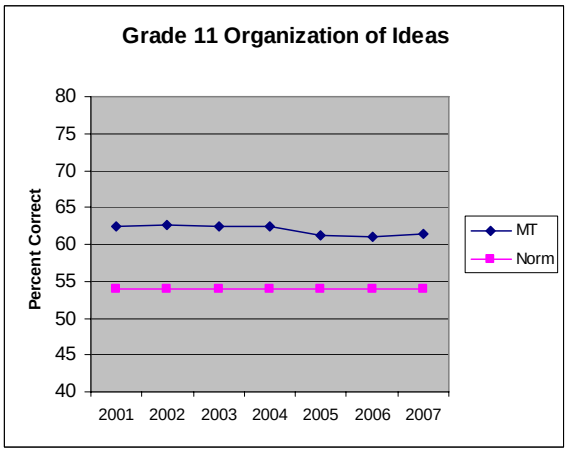


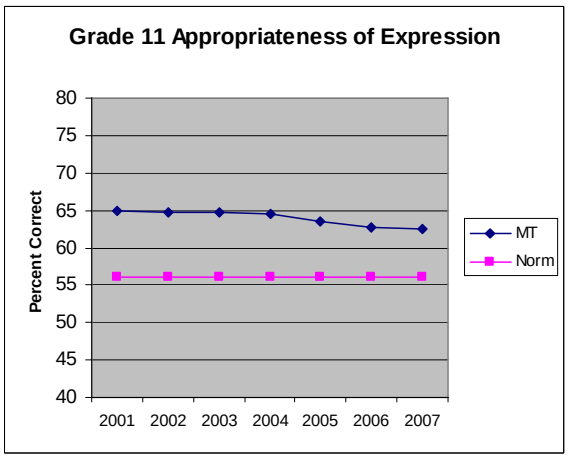




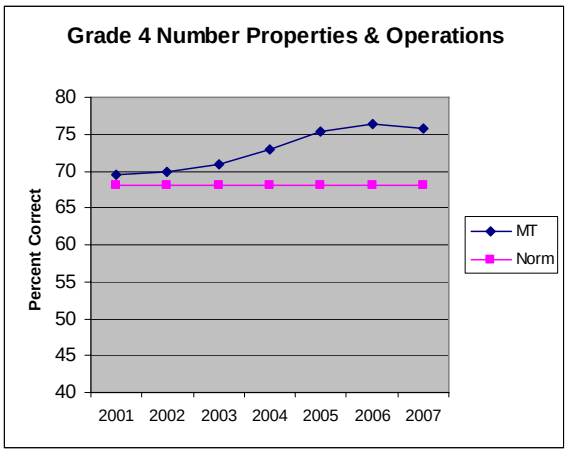
Language: Revising Written Materials Skills – Grade 11 Sentence Structure, Organization of Ideas, and Appropriateness of Expression							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 11 Sentence Structure	2001	11,089	.69	.21	.61	.37	Small
	2002	11,208	.68	.20	.61	.35	Small
	2003	11,122	.68	.21	.61	.32	Small
	2004	11,084	.68	.21	.61	.33	Small
	2005	10,910	.67	.21	.61	.27	Small
	2006	10,772	.66	.22	.61	.26	Small
	2007	10,976	.66	.21	.61	.26	Small
Grade 11 Organization of Ideas	2001	11,089	.62	.22	.54	.37	Small
	2002	11,208	.63	.23	.54	.38	Small
	2003	11,122	.62	.23	.54	.37	Small
	2004	11,084	.62	.23	.54	.37	Small
	2005	10,910	.61	.23	.54	.32	Small
	2006	10,772	.61	.23	.54	.31	Small
	2007	10,976	.62	.23	.54	.33	Small
Grade 11 Appropriate-ness of Expression	2001	11,089	.65	.20	.56	.44	Medium
	2002	11,208	.65	.20	.56	.43	Medium
	2003	11,122	.65	.20	.56	.42	Medium
	2004	11,084	.65	.20	.56	.42	Medium
	2005	10,910	.64	.21	.56	.37	Small
	2006	10,772	.63	.21	.56	.33	Small
	2007	10,976	.63	.21	.56	.32	Small

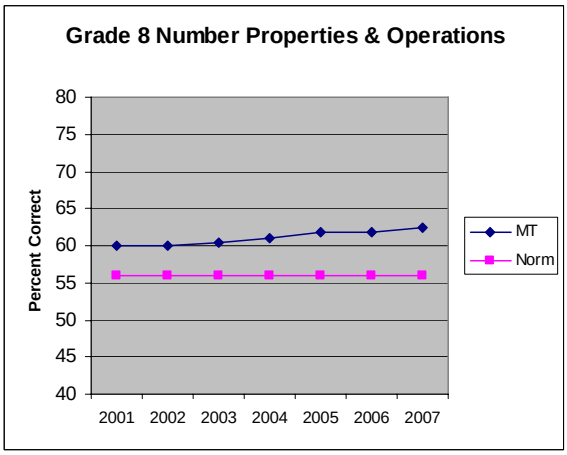




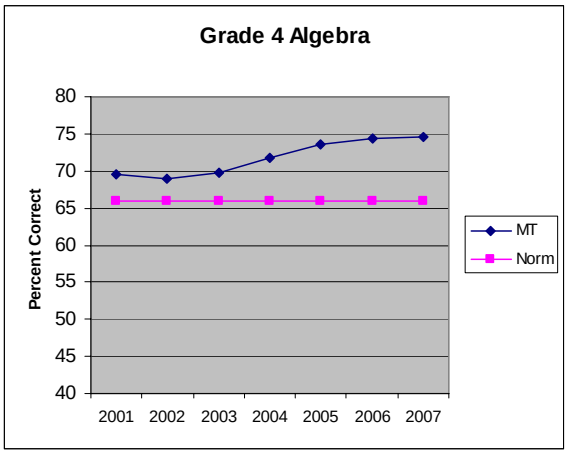


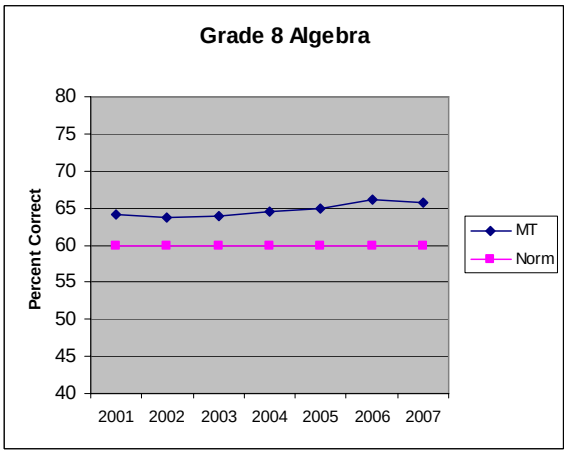
Math Concepts and Estimation Skill – Number Properties and Operations							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,515	.70	.21	.68	.08	No
	2002	11,402	.70	.21	.68	.10	Small
	2003	10,764	.71	.21	.68	.14	Small
	2004	10,634	.73	.20	.68	.25	Small
	2005	10,349	.75	.20	.68	.37	Small
	2006	10,427	.76	.20	.68	.42	Medium
	2007	10,042	.76	.20	.68	.38	Small
Grade 8	2001	12,161	.60	.24	.56	.18	Small
	2002	11,939	.60	.24	.56	.17	Small
	2003	11,789	.61	.24	.56	.19	Small
	2004	12,060	.61	.24	.56	.21	Small
	2005	11,660	.62	.23	.56	.25	Small
	2006	11,780	.62	.24	.56	.25	Small
	2007	10,909	.63	.24	.56	.28	Small



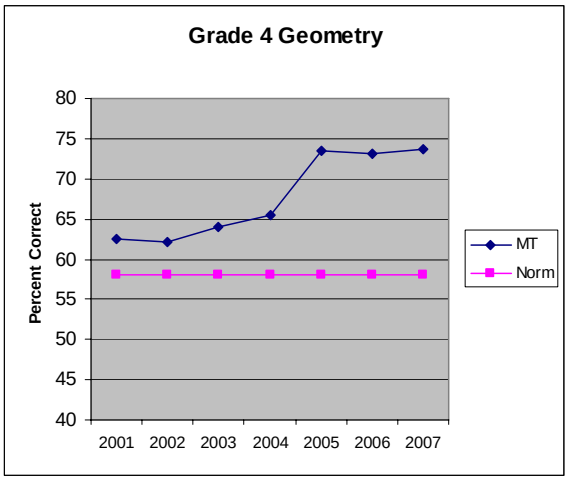


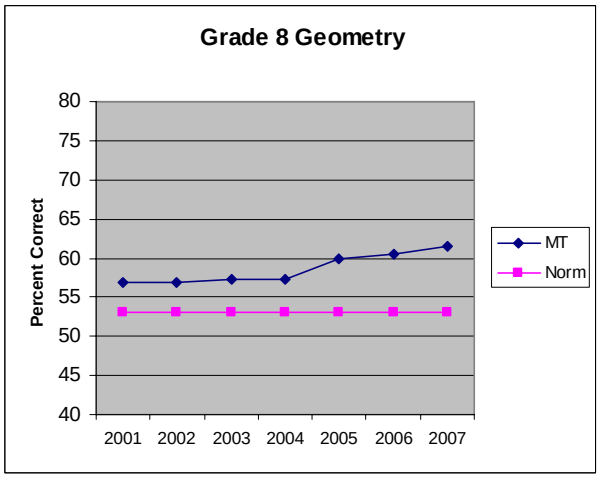
Math Concepts and Estimation Skill – Algebra							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,515	.70	.25	.66	.14	Small
	2002	11,402	.69	.25	.66	.12	Small
	2003	10,764	.70	.25	.66	.16	Small
	2004	10,634	.72	.24	.66	.23	Small
	2005	10,349	.74	.24	.66	.31	Small
	2006	10,427	.74	.24	.66	.34	Small
	2007	10,042	.75	.24	.66	.35	Small
Grade 8	2001	12,161	.64	.23	.60	.18	Small
	2002	11,939	.64	.24	.60	.16	Small
	2003	11,789	.64	.24	.60	.17	Small
	2004	12,060	.65	.23	.60	.19	Small
	2005	11,660	.65	.23	.60	.21	Small
	2006	11,780	.66	.23	.60	.26	Small
	2007	10,909	.66	.23	.60	.25	Small



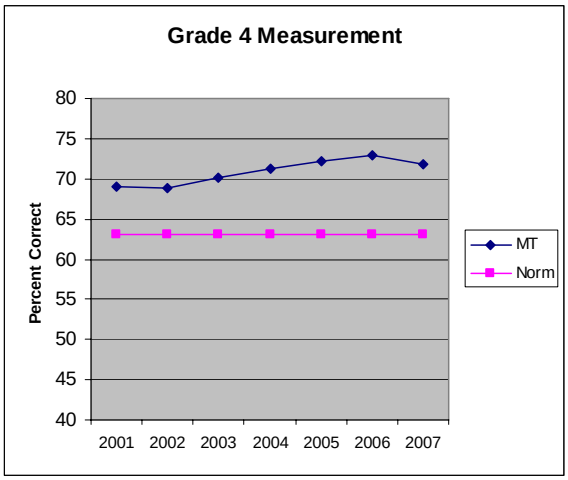


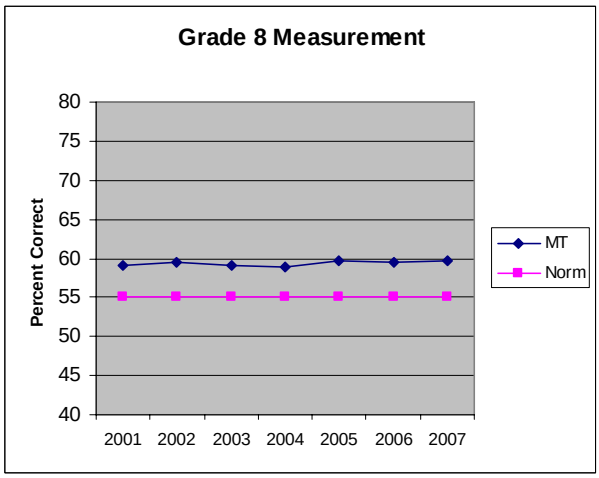
Math Concepts and Estimation Skill – Geometry							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,515	.63	.26	.58	.18	Small
	2002	11,402	.62	.26	.58	.16	Small
	2003	10,764	.64	.26	.58	.24	Small
	2004	10,634	.66	.25	.58	.30	Small
	2005	10,349	.73	.25	.58	.61	Medium
	2006	10,427	.73	.25	.58	.60	Medium
	2007	10,042	.74	.25	.58	.62	Medium
Grade 8	2001	12,161	.57	.27	.53	.15	Small
	2002	11,939	.57	.27	.53	.17	Small
	2003	11,789	.57	.27	.53	.16	Small
	2004	12,060	.57	.27	.53	.16	Small
	2005	11,660	.60	.27	.53	.26	Small
	2006	11,780	.61	.27	.53	.28	Small
	2007	10,909	.62	.27	.53	.32	Small



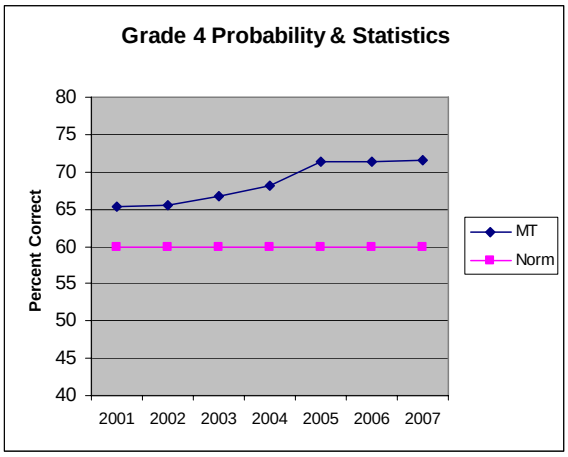


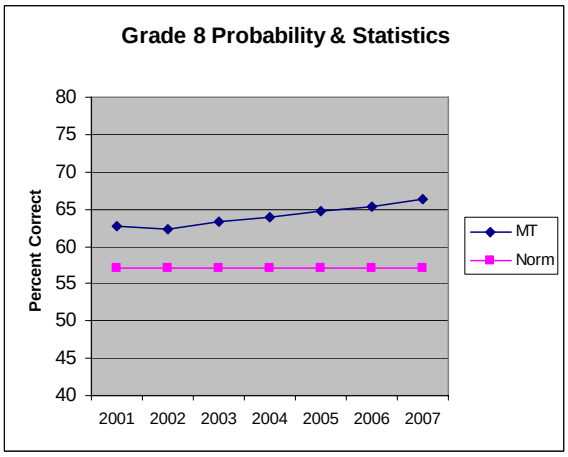
Math Concepts and Estimation Skill – Measurement							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,515	.69	.30	.63	.21	Small
	2002	11,402	.69	.30	.63	.20	Small
	2003	10,764	.70	.30	.63	.24	Small
	2004	10,634	.71	.29	.63	.28	Small
	2005	10,349	.72	.29	.63	.31	Small
	2006	10,427	.73	.29	.63	.34	Small
	2007	10,042	.72	.29	.63	.30	Small
Grade 8	2001	12,161	.59	.27	.55	.15	Small
	2002	11,939	.60	.27	.55	.17	Small
	2003	11,789	.59	.27	.55	.15	Small
	2004	12,060	.59	.27	.55	.14	Small
	2005	11,660	.60	.27	.55	.17	Small
	2006	11,780	.59	.27	.55	.16	Small
	2007	10,909	.60	.27	.55	.17	Small



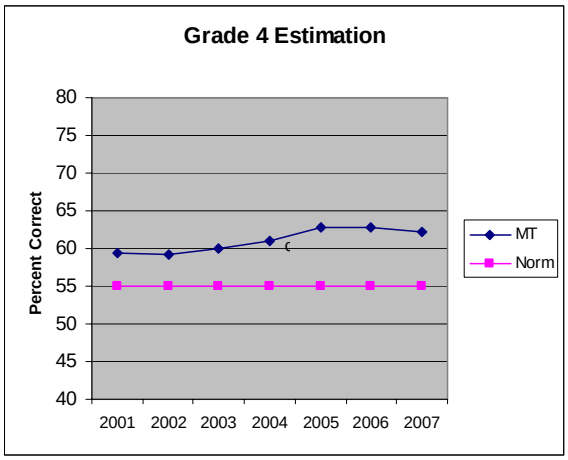


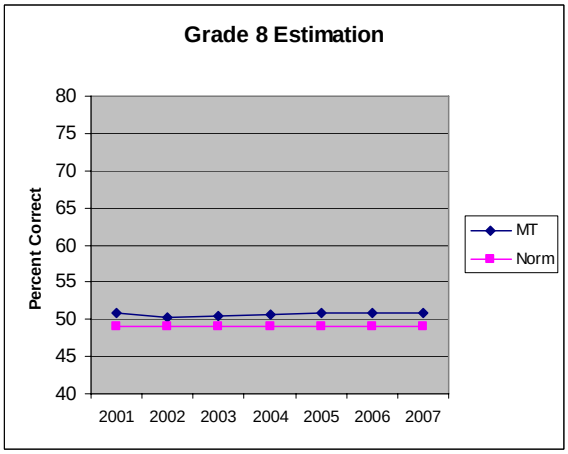
Math Concepts and Estimation Skill – Probability and Statistics							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,515	.65	.30	.60	.18	Small
	2002	11,402	.66	.30	.60	.19	Small
	2003	10,764	.67	.30	.60	.23	Small
	2004	10,634	.68	.30	.60	.28	Small
	2005	10,349	.71	.29	.60	.38	Small
	2006	10,427	.71	.29	.60	.39	Small
	2007	10,042	.72	.29	.60	.39	Small
Grade 8	2001	12,161	.63	.31	.57	.19	Small
	2002	11,939	.62	.31	.57	.17	Small
	2003	11,789	.63	.31	.57	.21	Small
	2004	12,060	.64	.31	.57	.22	Small
	2005	11,660	.65	.31	.57	.25	Small
	2006	11,780	.65	.31	.57	.27	Small
	2007	10,909	.66	.30	.57	.30	Small



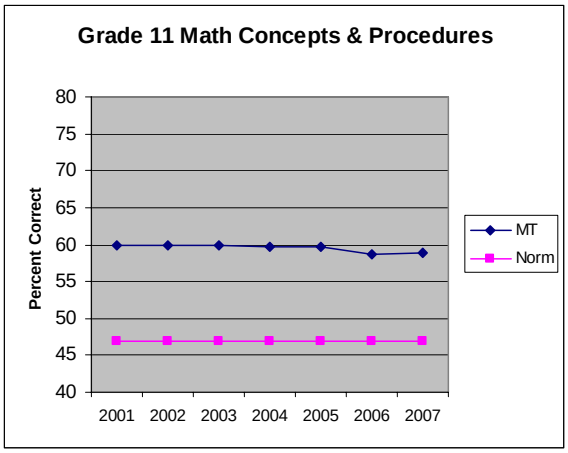


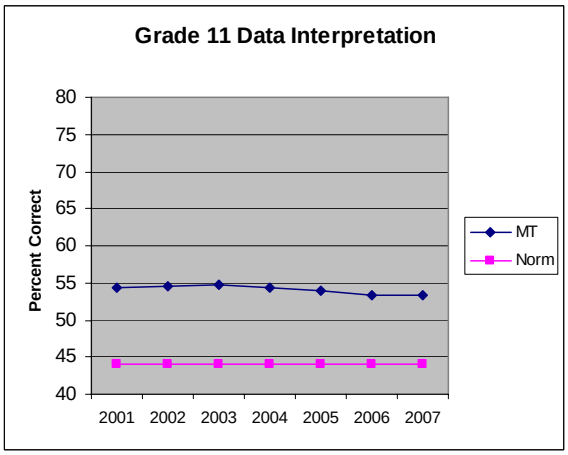
Math Concepts and Estimation Skill – Estimation							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,515	.60	.22	.55	.20	Small
	2002	11,402	.59	.23	.55	.19	Small
	2003	10,764	.60	.22	.55	.22	Small
	2004	10,634	.61	.22	.55	.27	Small
	2005	10,349	.63	.22	.55	.35	Small
	2006	10,427	.63	.22	.55	.35	Small
	2007	10,042	.62	.23	.55	.32	Small
Grade 8	2001	12,161	.51	.21	.49	.09	No
	2002	11,939	.50	.21	.49	.06	No
	2003	11,789	.50	.21	.49	.07	No
	2004	12,060	.51	.20	.49	.08	No
	2005	11,660	.51	.21	.49	.09	No
	2006	11,780	.51	.21	.49	.09	No
	2007	10,909	.51	.21	.49	.09	No

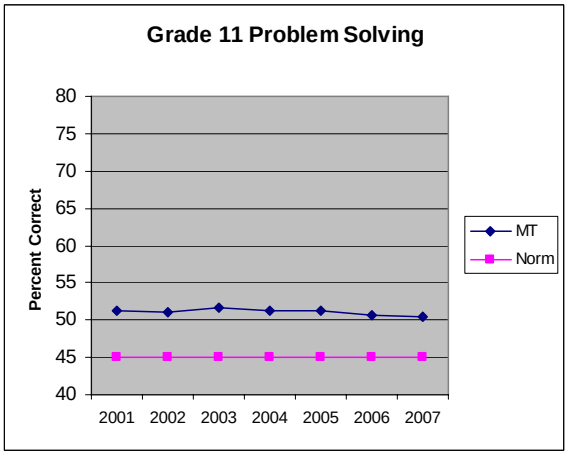




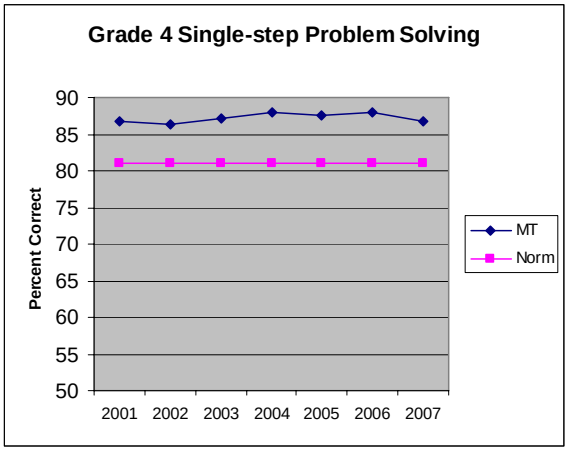
Mathematical Concepts and Problem Solving Skills – Grade 11							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 11 Mathe-matical Concepts & Pro-cedures	2001	11,087	.60	.27	.47	.49	Medium
	2002	11,142	.60	.26	.47	.49	Medium
	2003	11,108	.60	.26	.47	.49	Medium
	2004	11,094	.60	.27	.47	.47	Medium
	2005	10,889	.60	.27	.47	.48	Medium
	2006	10,769	.59	.27	.47	.44	Medium
	2007	10,980	.59	.27	.47	.45	Medium
Grade 11 Data Interpre-tation	2001	11,087	.54	.23	.44	.45	Medium
	2002	11,142	.55	.23	.44	.45	Medium
	2003	11,108	.55	.23	.44	.46	Medium
	2004	11,094	.54	.24	.44	.44	Medium
	2005	10,889	.54	.24	.44	.43	Medium
	2006	10,769	.53	.24	.44	.40	Medium
	2007	10,980	.53	.24	.44	.40	Medium
Grade 11 Problem Solving	2001	11,087	.51	.21	.45	.30	Small
	2002	11,142	.51	.21	.45	.29	Small
	2003	11,108	.52	.21	.45	.31	Small
	2004	11,094	.51	.21	.45	.30	Small
	2005	10,889	.51	.21	.45	.29	Small
	2006	10,769	.51	.21	.45	.27	Small
	2007	10,980	.51	.21	.45	.26	Small

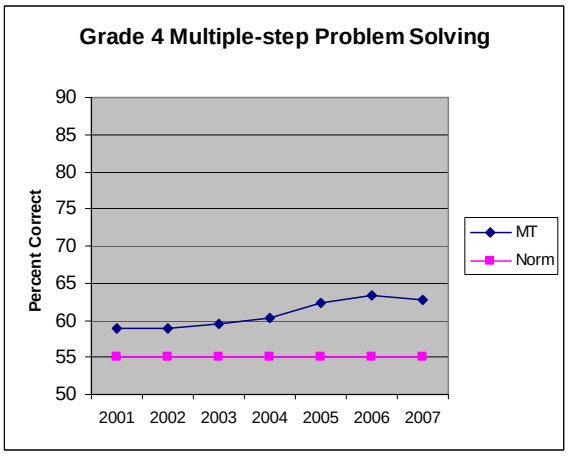


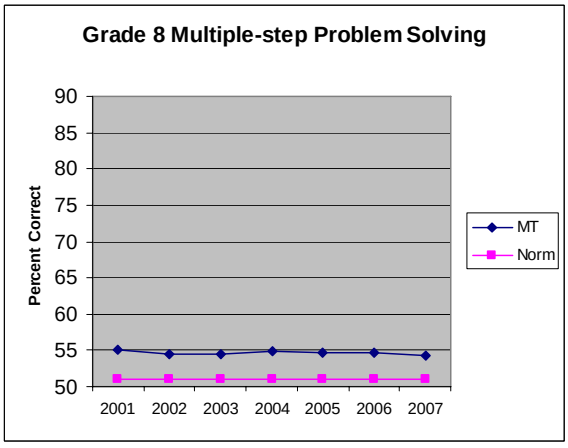




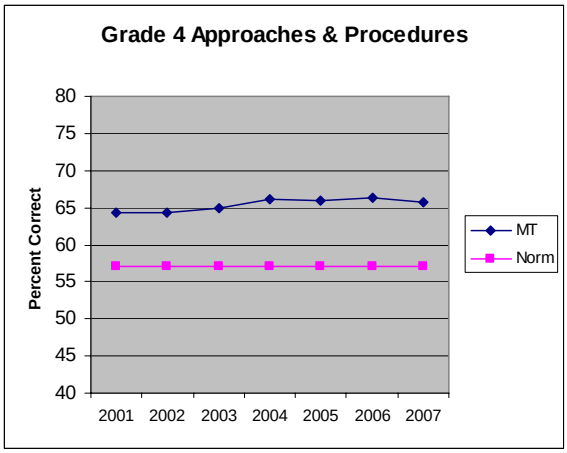
Math Problem Solving and Data Interpretation Skill – Single-step and Multiple-step Problem Solving							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4 Single-step Problems	2001	11,527	.87	.23	.81	.26	Small
	2002	11,422	.86	.23	.81	.24	Small
	2003	10,768	.87	.23	.81	.28	Small
	2004	10,646	.88	.22	.81	.31	Small
	2005	10,361	.88	.22	.81	.29	Small
	2006	10,452	.88	.22	.81	.31	Small
	2007	10,052	.87	.23	.81	.26	Small
Grade 4 Multiple-step Problems	2001	11,527	.59	.24	.55	.16	Small
	2002	11,422	.59	.24	.55	.16	Small
	2003	10,768	.59	.24	.55	.18	Small
	2004	10,646	.60	.24	.55	.22	Small
	2005	10,361	.62	.24	.55	.31	Small
	2006	10,452	.63	.24	.55	.35	Small
	2007	10,052	.63	.25	.55	.32	Small
Grade 8 Multiple-step Problems	2001	12,190	.55	.22	.51	.18	Small
	2002	11,975	.55	.23	.51	.16	Small
	2003	11,804	.54	.23	.51	.15	Small
	2004	12,089	.55	.22	.51	.18	Small
	2005	11,682	.55	.23	.51	.16	Small
	2006	11,787	.55	.23	.51	.17	Small
	2007	10,947	.54	.23	.51	.14	Small

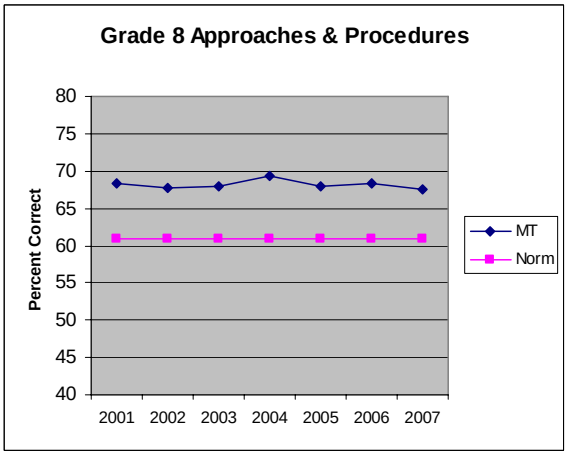




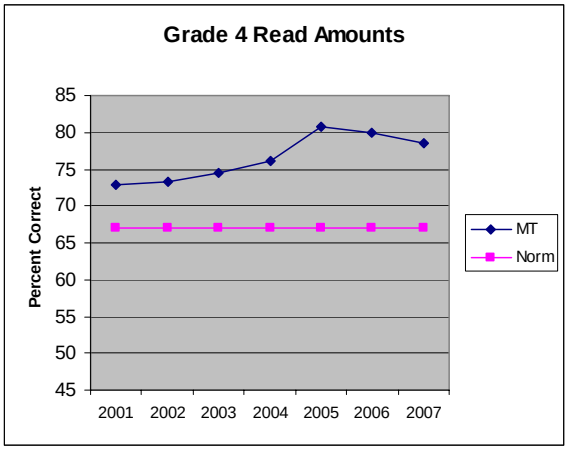


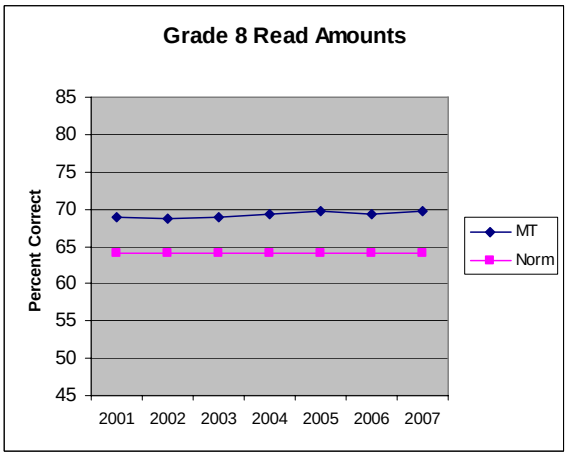
Math Problem Solving and Data Interpretation Skill – Approaches and Procedures							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,527	.64	.30	.57	.24	Small
	2002	11,422	.64	.31	.57	.24	Small
	2003	10,768	.65	.30	.57	.26	Small
	2004	10,646	.66	.30	.57	.30	Small
	2005	10,361	.65	.31	.57	.30	Small
	2006	10,452	.66	.30	.57	.31	Small
	2007	10,052	.66	.31	.57	.29	Small
Grade 8	2001	12,190	.68	.29	.61	.25	Small
	2002	11,975	.68	.29	.61	.23	Small
	2003	11,804	.68	.29	.61	.24	Small
	2004	12,089	.69	.28	.61	.29	Small
	2005	11,682	.68	.29	.61	.24	Small
	2006	11,787	.68	.29	.61	.25	Small
	2007	10,947	.68	.30	.61	.23	Small



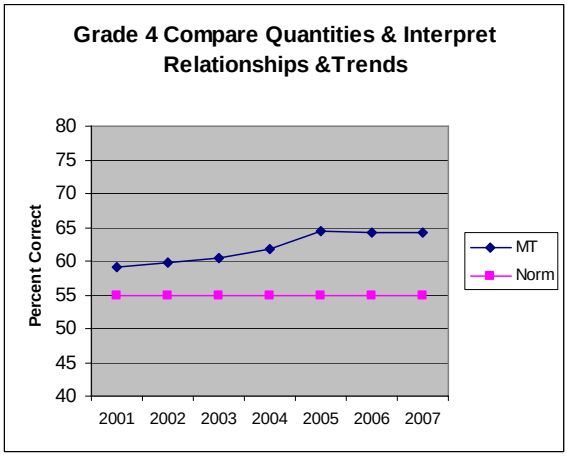


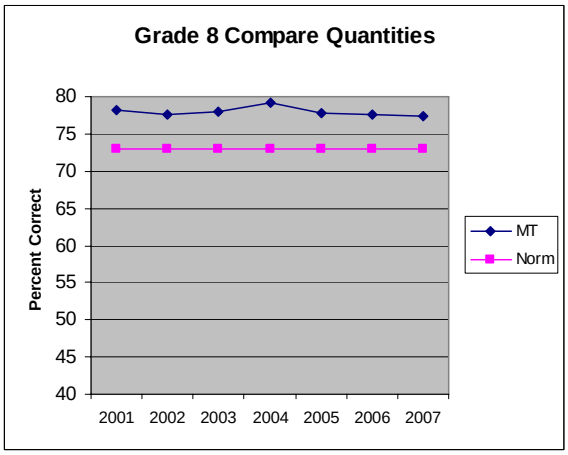
Math Problem Solving and Data Interpretation Skill – Read Amounts							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,527	.73	.28	.67	.21	Small
	2002	11,422	.73	.29	.67	.23	Small
	2003	10,768	.75	.28	.67	.27	Small
	2004	10,646	.76	.27	.67	.33	Small
	2005	10,361	.81	.26	.67	.50	Medium
	2006	10,452	.80	.27	.67	.47	Medium
	2007	10,052	.79	.28	.67	.42	Medium
Grade 8	2001	12,190	.69	.27	.64	.19	Small
	2002	11,975	.69	.27	.64	.18	Small
	2003	11,804	.69	.27	.64	.19	Small
	2004	12,089	.69	.26	.64	.20	Small
	2005	11,682	.70	.27	.64	.21	Small
	2006	11,787	.69	.27	.64	.20	Small
	2007	10,947	.70	.27	.64	.22	Small

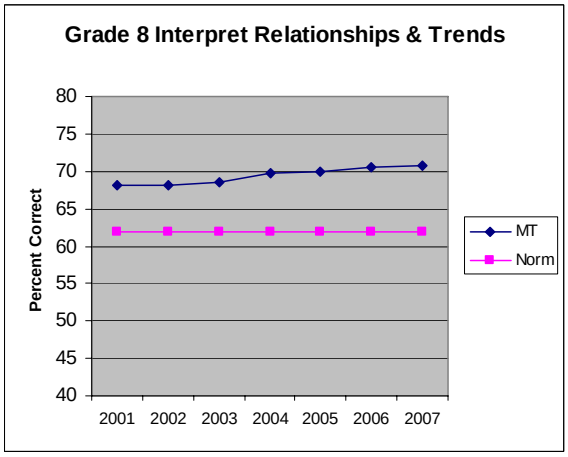




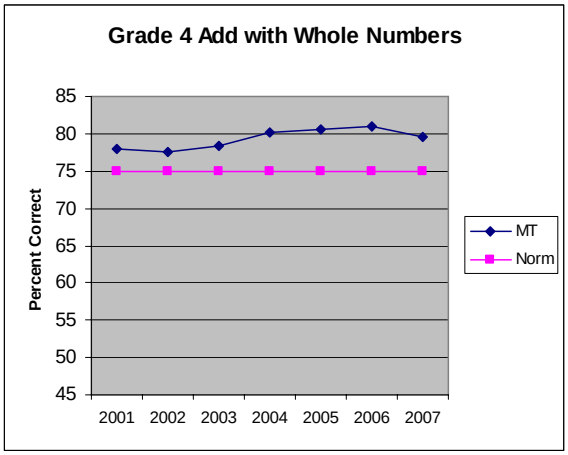
Math Problem Solving and Data Interpretation Skill – Compare Quantities and Interpret Relationships and Trends							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4 Compare Quantities & Interpret Relationships & Trends	2001	11,527	.59	.21	.55	.20	Small
	2002	11,422	.60	.21	.55	.22	Small
	2003	10,768	.61	.21	.55	.26	Small
	2004	10,646	.62	.21	.55	.31	Small
	2005	10,361	.64	.21	.55	.44	Medium
	2006	10,452	.64	.21	.55	.43	Medium
	2007	10,052	.64	.22	.55	.43	Medium
Grade 8 Compare Quantities	2001	12,190	.78	.25	.73	.21	Small
	2002	11,975	.78	.25	.73	.19	Small
	2003	11,804	.78	.25	.73	.20	Small
	2004	12,089	.79	.24	.73	.24	Small
	2005	11,682	.78	.25	.73	.19	Small
	2006	11,787	.78	.25	.73	.18	Small
	2007	10,947	.77	.26	.73	.17	Small
Grade 8 Interpret Relationships & Trends	2001	12,190	.68	.25	.62	.25	Small
	2002	11,975	.68	.25	.62	.25	Small
	2003	11,804	.69	.25	.62	.26	Small
	2004	12,089	.70	.24	.62	.32	Small
	2005	11,682	.70	.25	.62	.33	Small
	2006	11,787	.71	.25	.62	.34	Small
	2007	10,947	.71	.25	.62	.35	Small

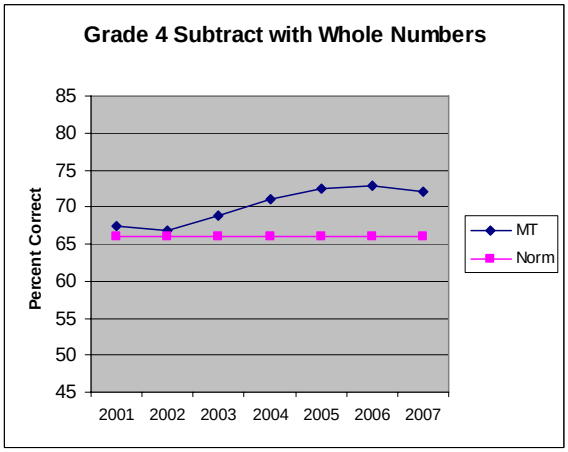


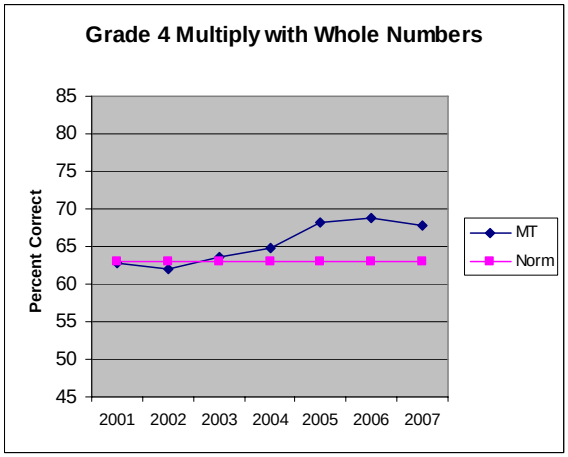


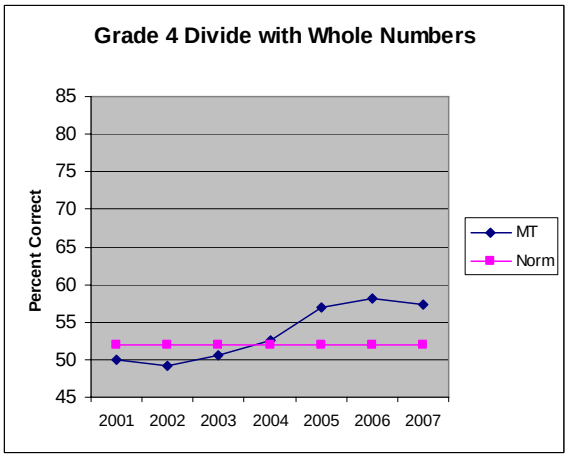


Math Computation – Grade 4							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4 Add with Whole Numbers	2001	11,510	.78	.23	.75	.13	Small
	2002	11,416	.78	.24	.75	.11	Small
	2003	10,761	.78	.24	.75	.15	Small
	2004	10,645	.80	.22	.75	.23	Small
	2005	10,356	.81	.22	.75	.25	Small
	2006	10,436	.81	.22	.75	.26	Small
	2007	10,038	.80	.23	.75	.21	Small
Grade 4 Subtract with Whole Numbers	2001	11,510	.68	.27	.66	.06	No
	2002	11,416	.67	.27	.66	.04	No
	2003	10,761	.69	.26	.66	.11	Small
	2004	10,645	.71	.26	.66	.19	Small
	2005	10,356	.73	.25	.66	.25	Small
	2006	10,436	.73	.25	.66	.27	Small
	2007	10,038	.72	.25	.66	.23	Small
Grade 4 Multiply with Whole Numbers	2001	11,510	.63	.23	.63	-.01	No
	2002	11,416	.62	.23	.63	-.04	No
	2003	10,761	.64	.23	.63	.02	No
	2004	10,645	.65	.23	.63	.08	No
	2005	10,356	.68	.23	.63	.23	Small
	2006	10,436	.69	.23	.63	.25	Small
	2007	10,038	.68	.24	.63	.21	Small
Grade 4 Divide with Whole Numbers	2001	11,510	.50	.28	.52	-.07	No
	2002	11,416	.49	.27	.52	-.10	(Small neg.)
	2003	10,761	.51	.28	.52	-.05	No
	2004	10,645	.53	.28	.52	.02	No
	2005	10,356	.58	.29	.52	.18	Small
	2006	10,436	.58	.29	.52	.22	Small
	2007	10,038	.57	.29	.52	.19	Small

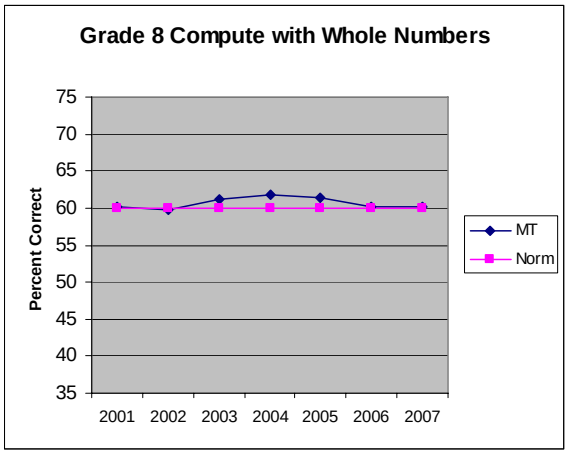

Grade 4 Add with Whole Numbers
Percent Correct
85
80
75
70
65
60
55
50
45
2001 2002 2003 2004 2005 2006 2007
MT
Norm

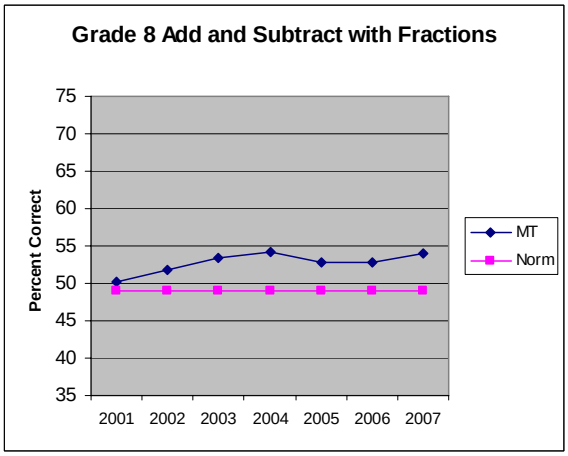

Grade 4 Subtract with Whole Numbers
Percent Correct
85
80
75
70
65
60
55
50
45
2001 2002 2003 2004 2005 2006 2007
MT
Norm

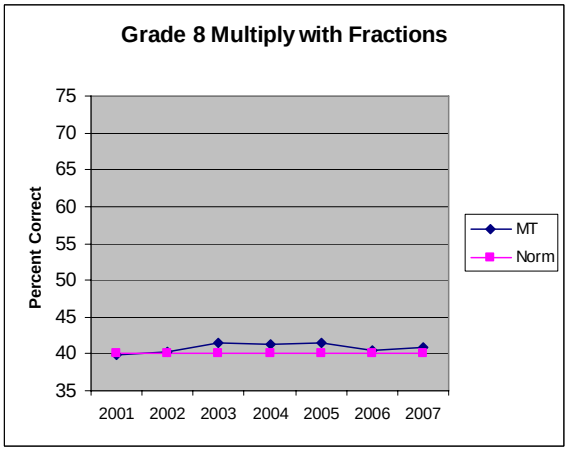

Grade 4 Multiply with Whole Numbers
Percent Correct
85
80
75
70
65
60
55
50
45
2001 2002 2003 2004 2005 2006 2007
MT
Norm

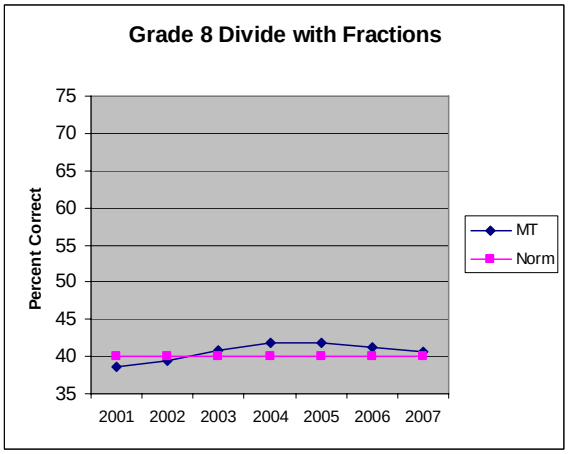

Grade 4 Divide with Whole Numbers
Percent Correct
85
80
75
70
65
60
55
50
45
2001 2002 2003 2004 2005 2006 2007
MT
Norm

Math Computation – Grade 8							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 8 Compute with Whole Numbers	2001	12,190	.60	.26	.60	.00	No
	2002	11,961	.60	.26	.60	-.00	No
	2003	11,793	.61	.26	.60	.04	No
	2004	12,094	.62	.26	.60	.07	No
	2005	11,672	.61	.26	.60	.05	No
	2006	11,782	.60	.26	.60	.00	No
	2007	10,938	.60	.26	.60	.01	No
Grade 8 Add & Subtract with Fractions	2001	12,190	.50	.39	.49	.03	No
	2002	11,961	.52	.39	.49	.07	No
	2003	11,793	.53	.39	.49	.11	Small
	2004	12,094	.54	.39	.49	.14	Small
	2005	11,672	.53	.39	.49	.10	Small
	2006	11,782	.53	.39	.49	.10	Small
	2007	10,938	.54	.39	.49	.13	Small
Grade 8 Multiply with Fractions	2001	12,190	.40	.30	.40	-.00	No
	2002	11,961	.40	.30	.40	.01	No
	2003	11,793	.41	.31	.40	.05	No
	2004	12,094	.41	.31	.40	.04	No
	2005	11,672	.42	.31	.40	.05	No
	2006	11,782	.40	.31	.40	.01	No
	2007	10,938	.41	.31	.40	.03	No
Grade 8 Divide with Fractions	2001	12,190	.39	.31	.40	-.05	No
	2002	11,961	.39	.31	.40	-.02	No
	2003	11,793	.41	.31	.40	.03	No
	2004	12,094	.42	.31	.40	.06	No
	2005	11,672	.42	.32	.40	.06	No
	2006	11,782	.41	.32	.40	.04	No
	2007	10,938	.41	.31	.40	.02	No

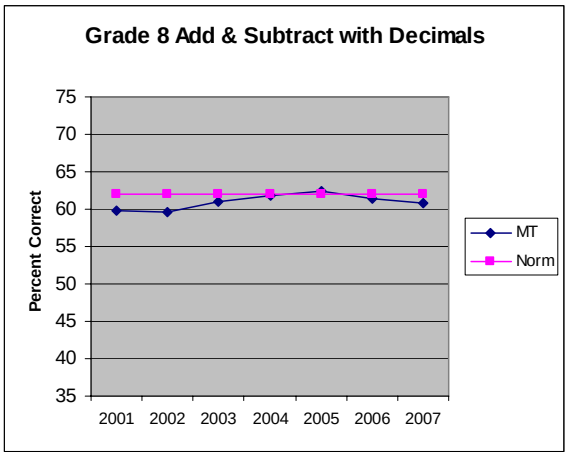

Grade 8 Compute with Whole Numbers
Percent Correct
75
70
65
60
55
50
45
40
35
2001 2002 2003 2004 2005 2006 2007
MT
Norm

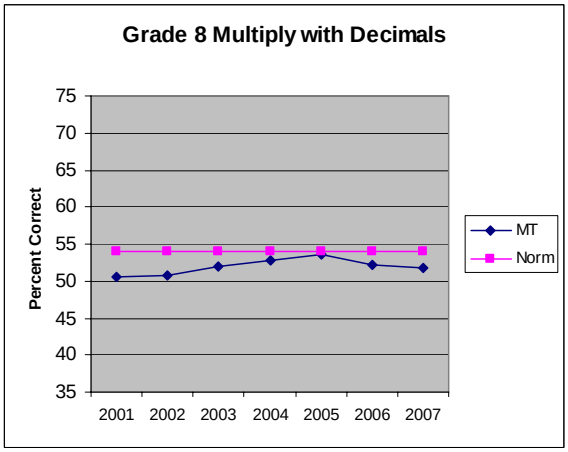

Grade 8 Add and Subtract with Fractions
Percent Correct
75
70
65
60
55
50
45
40
35
2001 2002 2003 2004 2005 2006 2007
MT
Norm

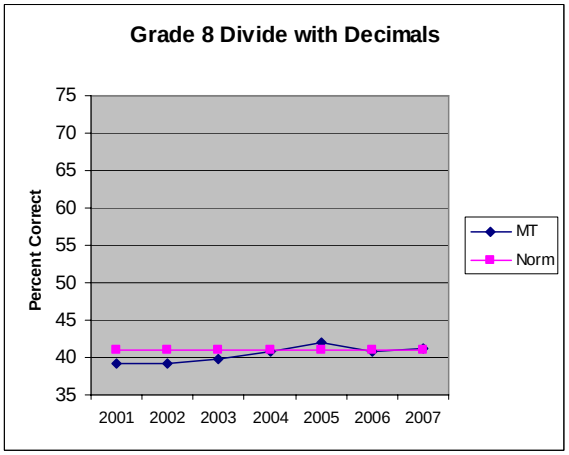

Grade 8 Multiply with Fractions
Percent Correct
75
70
65
60
55
50
45
40
35
2001 2002 2003 2004 2005 2006 2007
MT
Norm


Grade 8 Divide with Fractions
Percent Correct
75
70
65
60
55
50
45
40
35
2001 2002 2003 2004 2005 2006 2007
MT
Norm

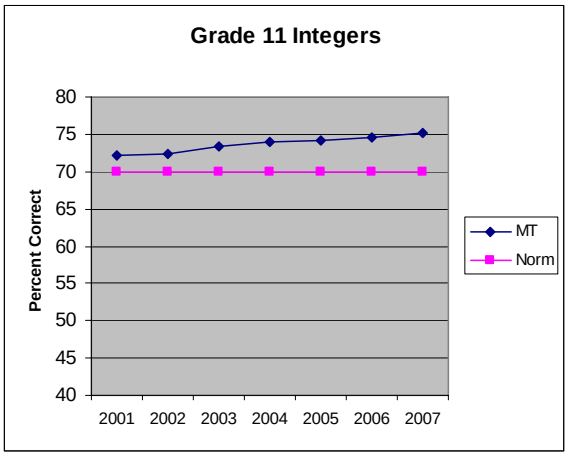
Math Computation – Grade 8 (continued)							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 8 Add & Subtract with Decimals	2001	12,190	.60	.27	.62	-.09	No
	2002	11,961	.60	.27	.62	-.09	No
	2003	11,793	.61	.26	.62	-.03	No
	2004	12,094	.62	.26	.62	-.00	No
	2005	11,672	.62	.27	.62	.01	No
	2006	11,782	.61	.27	.62	-.02	No
	2007	10,938	.61	.27	.62	-.05	No
Grade 8 Multiply with Decimals	2001	12,190	.51	.26	.54	-.13	(Small neg.)
	2002	11,961	.51	.26	.54	-.12	(Small neg.)
	2003	11,793	.52	.26	.54	-.08	No
	2004	12,094	.53	.26	.54	-.05	No
	2005	11,672	.54	.27	.54	-.02	No
	2006	11,782	.52	.26	.54	-.07	No
	2007	10,938	.52	.26	.54	-.08	No
Grade 8 Divide with Decimals	2001	12,190	.39	.25	.41	-.07	No
	2002	11,961	.39	.26	.41	-.06	No
	2003	11,793	.40	.26	.41	-.04	No
	2004	12,094	.41	.26	.41	-.01	No
	2005	11,672	.42	.26	.41	.04	No
	2006	11,782	.41	.26	.41	-.00	No
	2007	10,938	.41	.26	.41	.01	No

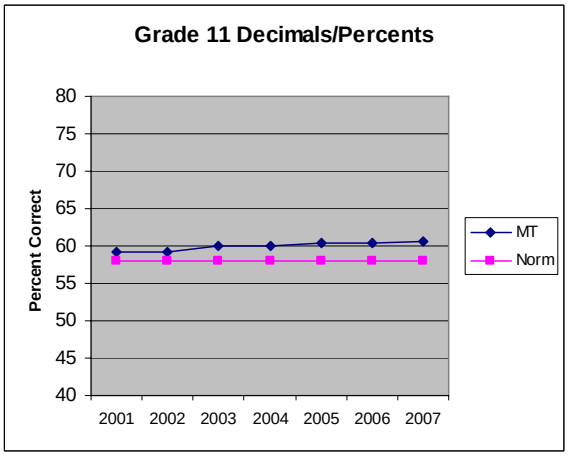


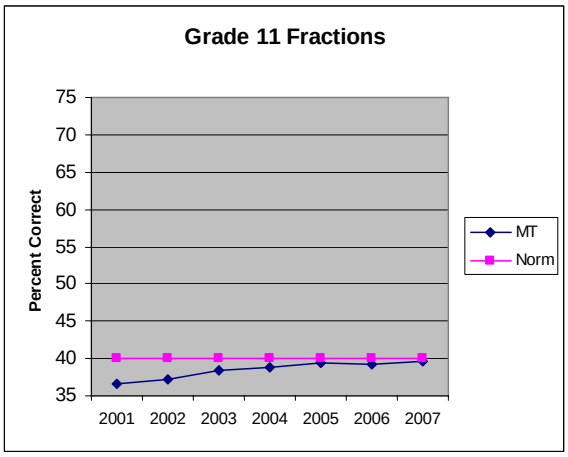


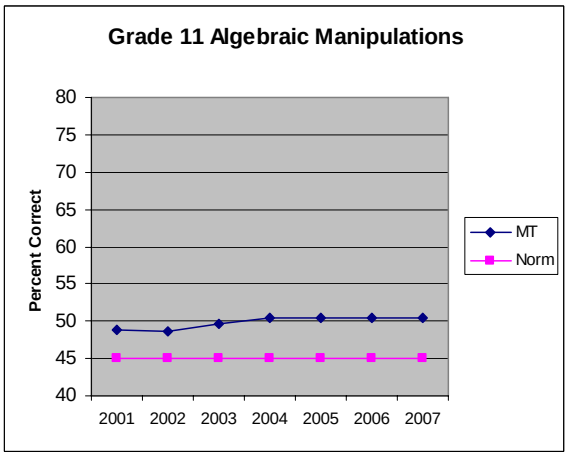


Math Computation – Grade 11							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 11 Integers	2001	10,954	.72	.22	.70	.10	Small
	2002	11,151	.72	.22	.70	.11	Small
	2003	11,110	.73	.22	.70	.16	Small
	2004	11,084	.74	.22	.70	.18	Small
	2005	10,849	.74	.22	.70	.19	Small
	2006	10,740	.75	.21	.70	.22	Small
	2007	10,949	.75	.21	.70	.24	Small
Grade 11 Decimals/ Percents	2001	10,954	.59	.24	.58	.05	No
	2002	11,151	.59	.24	.58	.05	No
	2003	11,110	.60	.24	.58	.08	No
	2004	11,084	.60	.24	.58	.09	No
	2005	10,849	.61	.24	.58	.11	Small
	2006	10,740	.61	.24	.58	.11	Small
	2007	10,949	.61	.24	.58	.11	Small
Grade 11 Fractions	2001	10,954	.37	.28	.40	-.12	(Small Neg.)
	2002	11,151	.37	.28	.40	-.10	(Small Neg.)
	2003	11,110	.39	.29	.40	-.05	No
	2004	11,084	.39	.29	.40	-.04	No
	2005	10,849	.39	.29	.40	-.02	No
	2006	10,740	.39	.29	.40	-.02	No
	2007	10,949	.40	.29	.40	-.01	No
Grade 11 Algebraic Manipu-lations	2001	10,954	.49	.27	.45	.15	Small
	2002	11,151	.49	.27	.45	.14	Small
	2003	11,110	.50	.26	.45	.17	Small
	2004	11,084	.50	.27	.45	.20	Small
	2005	10,849	.50	.27	.45	.20	Small
	2006	10,740	.51	.27	.45	.21	Small
	2007	10,949	.51	.27	.45	.21	Small

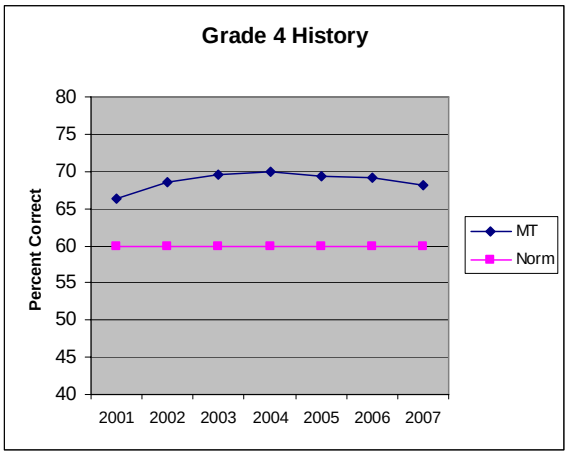

Grade 11 Integers
Percent Correct
80
75
70
65
60
55
50
45
40
2001 2002 2003 2004 2005 2006 2007
MT
Norm

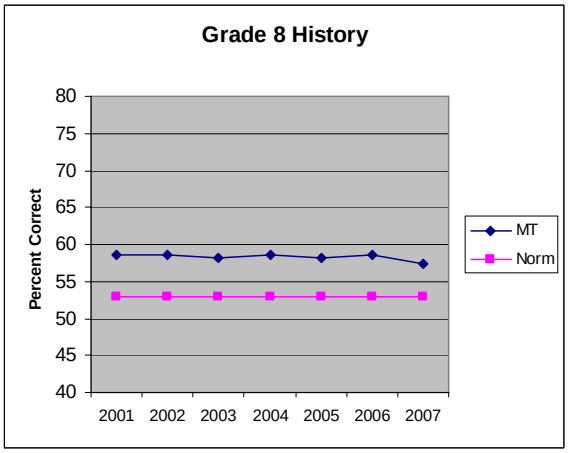

Grade 11 Decimals/Percents
Percent Correct
80
75
70
65
60
55
50
45
40
2001 2002 2003 2004 2005 2006 2007
MT
Norm


Grade 11 Fractions
Percent Correct
75
70
65
60
55
50
45
40
35
2001 2002 2003 2004 2005 2006 2007
MT
Norm

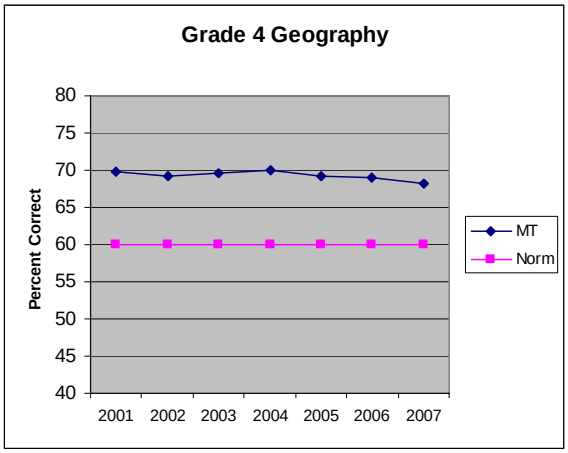

Grade 11 Algebraic Manipulations
Percent Correct
80
75
70
65
60
55
50
45
40
2001 2002 2003 2004 2005 2006 2007
MT
Norm

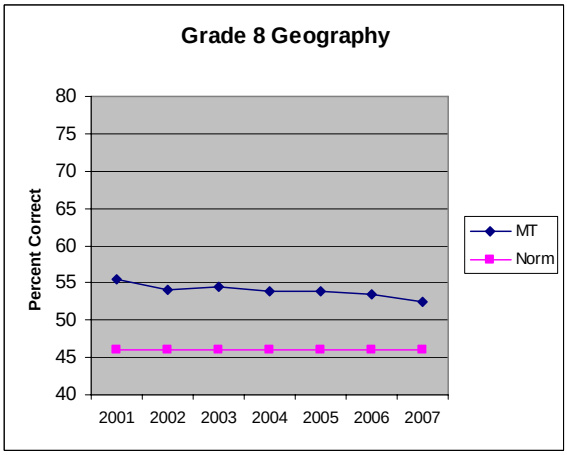
Social Studies Skill – History							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,516	.66	.21	.60	.30	Small
	2002	11,425	.69	.22	.60	.40	Medium
	2003	10,758	.70	.21	.60	.45	Medium
	2004	10,641	.70	.21	.60	.47	Medium
	2005	10,349	.69	.21	.60	.44	Medium
	2006	10,423	.69	.21	.60	.43	Medium
	2007	10,031	.68	.22	.60	.38	Small
Grade 8	2001	12,163	.59	.20	.53	.27	Small
	2002	11,976	.59	.21	.53	.27	Small
	2003	11,786	.58	.20	.53	.25	Small
	2004	12,090	.59	.20	.53	.28	Small
	2005	11,672	.58	.21	.53	.26	Small
	2006	11,773	.59	.21	.53	.28	Small
	2007	10,935	.57	.21	.53	.21	Small



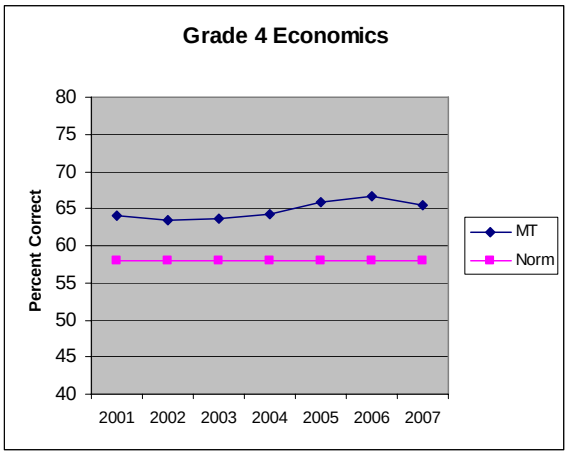


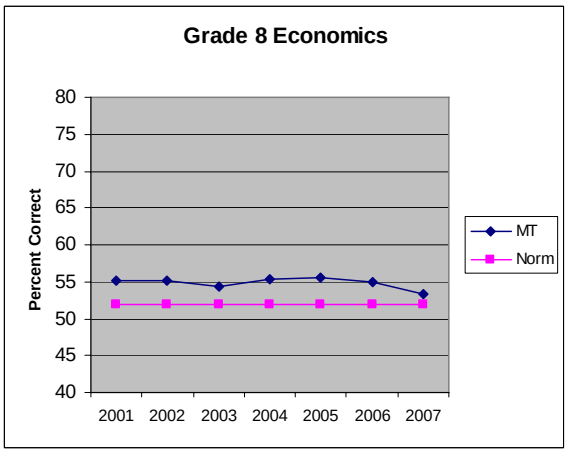
Social Studies Skill – Geography							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,516	.70	.19	.60	.51	Medium
	2002	11,425	.69	.20	.60	.48	Medium
	2003	10,758	.70	.19	.60	.50	Medium
	2004	10,641	.70	.19	.60	.51	Medium
	2005	10,349	.69	.19	.60	.48	Medium
	2006	10,423	.69	.19	.60	.47	Medium
	2007	10,031	.68	.20	.60	.42	Medium
Grade 8	2001	12,163	.55	.28	.46	.34	Small
	2002	11,976	.54	.28	.46	.29	Small
	2003	11,786	.54	.28	.46	.30	Small
	2004	12,090	.54	.27	.46	.29	Small
	2005	11,672	.54	.28	.46	.28	Small
	2006	11,773	.53	.27	.46	.27	Small
	2007	10,935	.52	.27	.46	.23	Small



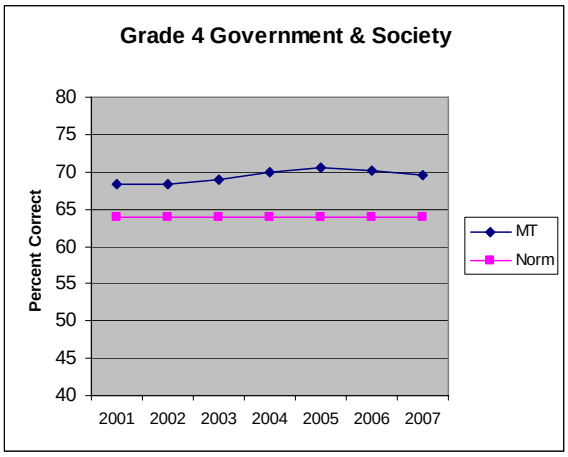


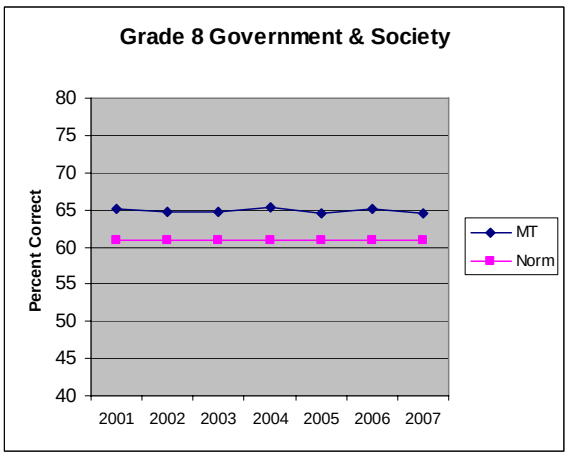
Social Studies Skill – Economics							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,516	.64	.24	.58	.25	Small
	2002	11,425	.63	.24	.58	.22	Small
	2003	10,758	.64	.24	.58	.23	Small
	2004	10,641	.64	.24	.58	.26	Small
	2005	10,349	.66	.24	.58	.32	Small
	2006	10,423	.67	.24	.58	.36	Small
	2007	10,031	.65	.25	.58	.31	Small
Grade 8	2001	12,163	.55	.22	.52	.14	Small
	2002	11,976	.55	.22	.52	.15	Small
	2003	11,786	.54	.21	.52	.11	Small
	2004	12,090	.55	.21	.52	.16	Small
	2005	11,672	.56	.22	.52	.17	Small
	2006	11,773	.55	.21	.52	.14	Small
	2007	10,935	.53	.21	.52	.07	No



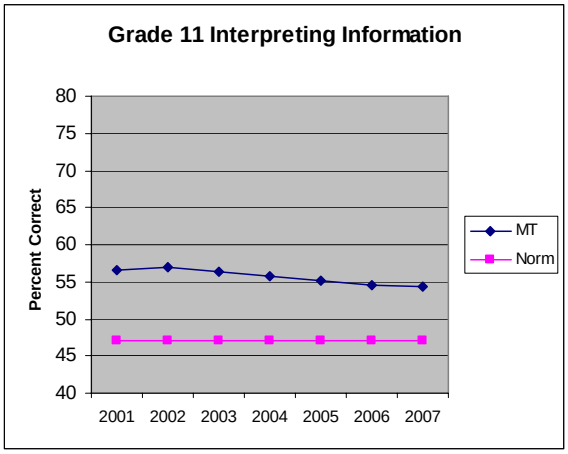


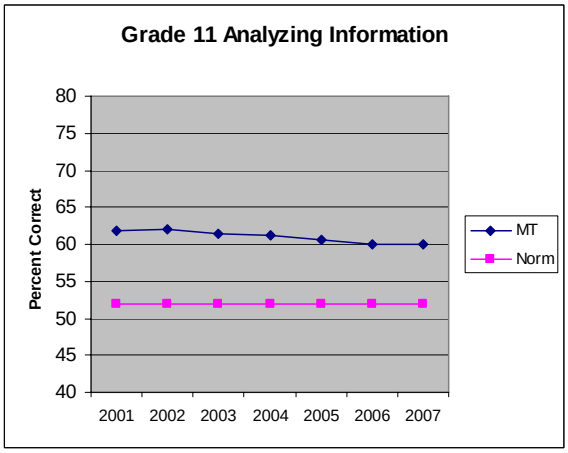
Social Studies Skill – Government and Society							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,516	.68	.21	.64	.22	Small
	2002	11,425	.68	.21	.64	.21	Small
	2003	10,758	.69	.21	.64	.24	Small
	2004	10,641	.70	.20	.64	.29	Small
	2005	10,349	.71	.20	.64	.32	Small
	2006	10,423	.70	.20	.64	.30	Small
	2007	10,031	.70	.21	.64	.27	Small
Grade 8	2001	12,163	.65	.22	.61	.19	Small
	2002	11,976	.65	.22	.61	.17	Small
	2003	11,786	.65	.22	.61	.17	Small
	2004	12,090	.65	.22	.61	.19	Small
	2005	11,672	.65	.23	.61	.16	Small
	2006	11,773	.65	.23	.61	.19	Small
	2007	10,935	.65	.23	.61	.16	Small

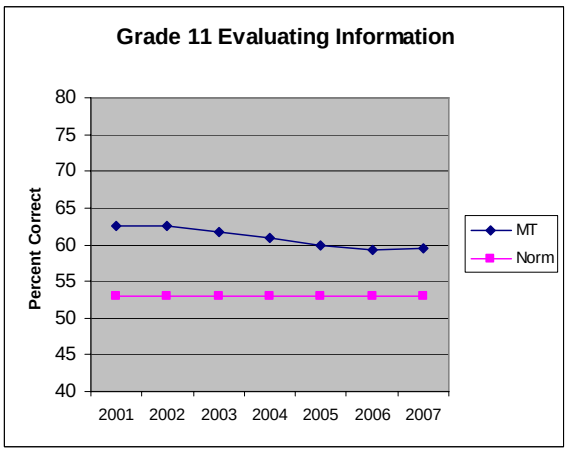




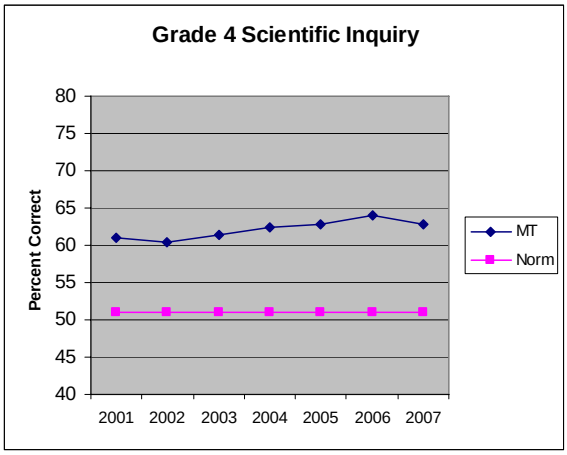
Analysis of Social Studies Materials – Grade 11							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 11 Interpreting Information	2001	11,063	.57	.20	.47	.47	Medium
	2002	11,094	.57	.20	.47	.49	Medium
	2003	11,073	.56	.20	.47	.46	Medium
	2004	11,035	.56	.20	.47	.43	Medium
	2005	10,876	.55	.21	.47	.40	Medium
	2006	10,687	.55	.21	.47	.37	Small
	2007	10,976	.54	.21	.47	.36	Small
Grade 11 Analyzing Information	2001	11,063	.62	.22	.52	.45	Medium
	2002	11,094	.62	.22	.52	.45	Medium
	2003	11,073	.61	.22	.52	.43	Medium
	2004	11,035	.61	.22	.52	.41	Medium
	2005	10,876	.61	.23	.52	.39	Small
	2006	10,687	.60	.22	.52	.36	Small
	2007	10,976	.60	.22	.52	.36	Small
Grade 11 Evaluating Information	2001	11,063	.63	.21	.53	.45	Medium
	2002	11,094	.63	.21	.53	.45	Medium
	2003	11,073	.62	.21	.53	.41	Medium
	2004	11,035	.61	.21	.53	.37	Small
	2005	10,876	.60	.22	.53	.33	Small
	2006	10,687	.59	.22	.53	.30	Small
	2007	10,976	.60	.22	.53	.31	Small

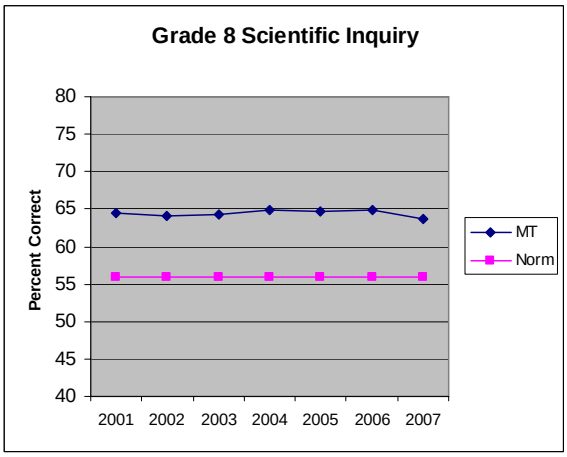




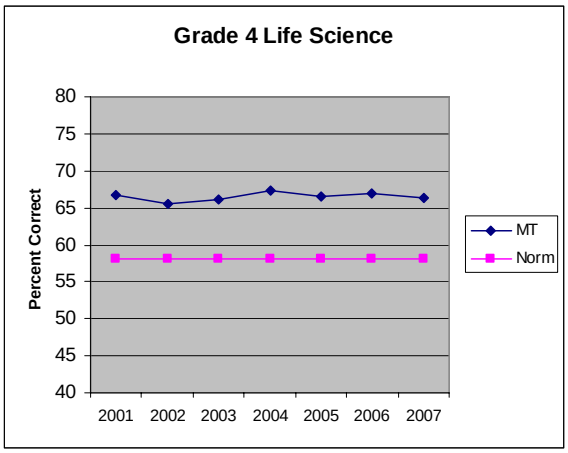


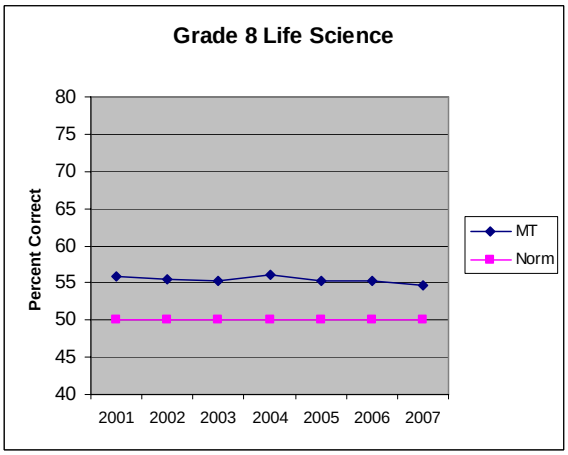
Science Skill – Scientific Inquiry							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,515	.61	.24	.51	.43	Medium
	2002	11,415	.61	.24	.51	.40	Medium
	2003	10,750	.62	.24	.51	.45	Medium
	2004	10,635	.63	.23	.51	.49	Medium
	2005	10,341	.63	.24	.51	.51	Medium
	2006	10,427	.64	.24	.51	.55	Medium
	2007	10,023	.63	.24	.51	.50	Medium
Grade 8	2001	12,165	.64	.22	.56	.39	Small
	2002	11,968	.64	.22	.56	.37	Small
	2003	11,775	.64	.22	.56	.38	Small
	2004	12,090	.65	.21	.56	.41	Medium
	2005	11,654	.65	.22	.56	.40	Medium
	2006	11,767	.65	.22	.56	.41	Medium
	2007	10,929	.64	.22	.56	.35	Small



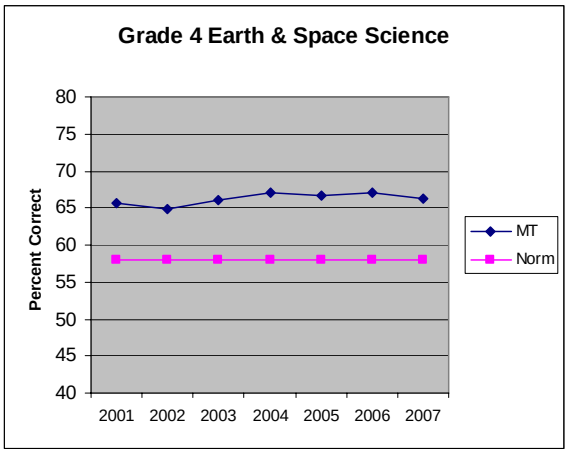


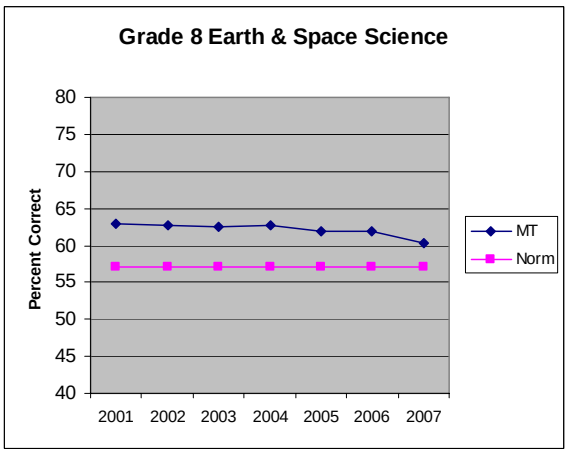
Science Skill – Life Science							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,515	.67	.21	.58	.42	Medium
	2002	11,415	.66	.22	.58	.36	Small
	2003	10,750	.66	.21	.58	.39	Small
	2004	10,635	.67	.21	.58	.44	Medium
	2005	10,341	.67	.21	.58	.41	Medium
	2006	10,427	.67	.21	.58	.43	Medium
	2007	10,023	.66	.22	.58	.40	Medium
Grade 8	2001	12,165	.56	.20	.50	.29	Small
	2002	11,968	.55	.20	.50	.26	Small
	2003	11,775	.55	.20	.50	.26	Small
	2004	12,090	.56	.20	.50	.30	Small
	2005	11,654	.55	.20	.50	.26	Small
	2006	11,767	.55	.20	.50	.26	Small
	2007	10,929	.55	.21	.50	.23	Small



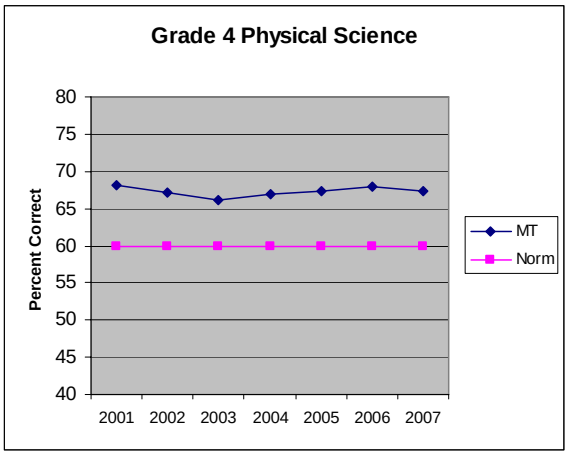


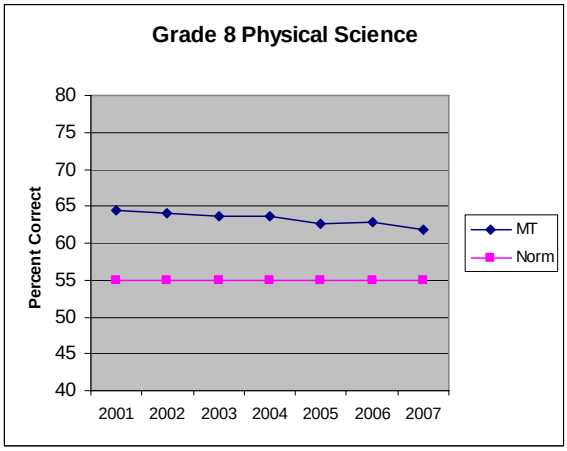
Science Skill – Earth and Space Science							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,515	.66	.21	.58	.36	Small
	2002	11,415	.65	.22	.58	.32	Small
	2003	10,750	.66	.21	.58	.38	Small
	2004	10,635	.67	.21	.58	.43	Medium
	2005	10,341	.67	.21	.58	.41	Medium
	2006	10,427	.67	.21	.58	.43	Medium
	2007	10,023	.66	.22	.58	.39	Small
Grade 8	2001	12,165	.63	.22	.57	.28	Small
	2002	11,968	.63	.22	.57	.27	Small
	2003	11,775	.63	.22	.57	.25	Small
	2004	12,090	.63	.21	.57	.26	Small
	2005	11,654	.62	.22	.57	.23	Small
	2006	11,767	.62	.22	.57	.23	Small
	2007	10,929	.60	.22	.57	.15	Small



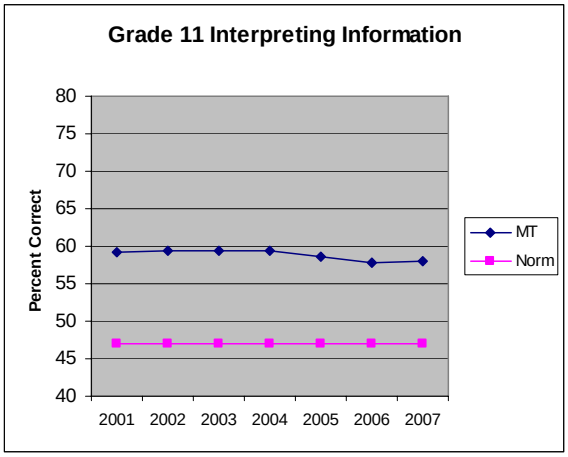


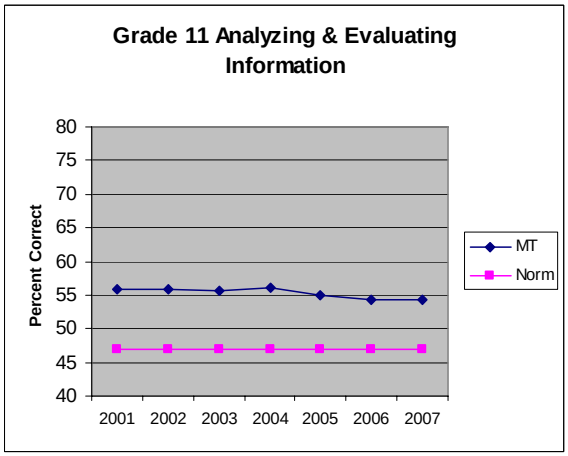
Science Skill – Physical Science							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,515	.68	.28	.60	.29	Small
	2002	11,415	.67	.29	.60	.26	Small
	2003	10,750	.66	.29	.60	.22	Small
	2004	10,635	.67	.28	.60	.25	Small
	2005	10,341	.67	.28	.60	.26	Small
	2006	10,427	.68	.28	.60	.28	Small
	2007	10,023	.67	.29	.60	.26	Small
Grade 8	2001	12,165	.65	.24	.55	.40	Medium
	2002	11,968	.64	.24	.55	.38	Small
	2003	11,775	.64	.24	.55	.36	Small
	2004	12,090	.64	.23	.55	.36	Small
	2005	11,654	.63	.24	.55	.32	Small
	2006	11,767	.63	.24	.55	.33	Small
	2007	10,929	.62	.24	.55	.29	Small

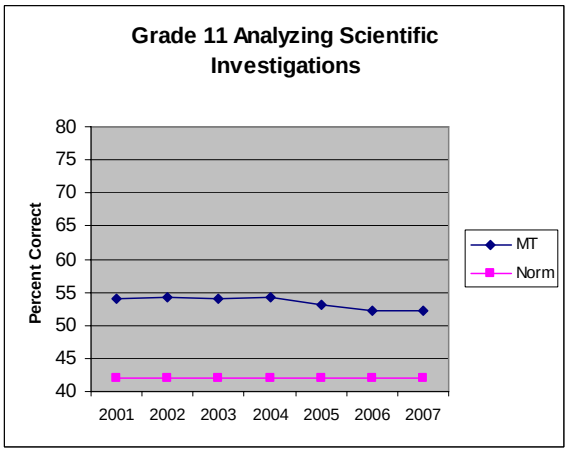




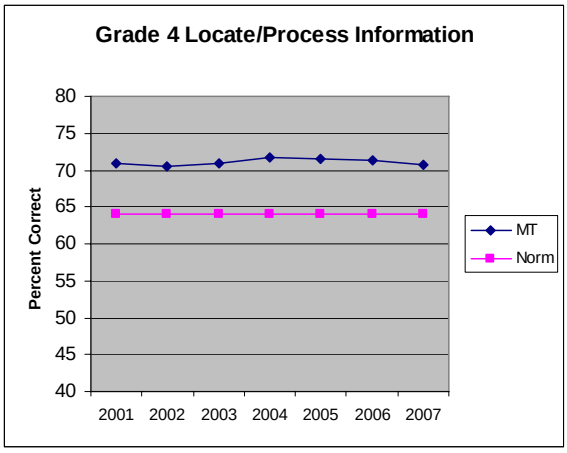
Analysis of Science Materials – Grade 11							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 11 Interpreting Information	2001	11,048	.59	.24	.47	.51	Medium
	2002	11,054	.59	.24	.47	.52	Medium
	2003	11,071	.59	.24	.47	.52	Medium
	2004	11,023	.60	.24	.47	.53	Medium
	2005	10,846	.59	.24	.47	.49	Medium
	2006	10,687	.58	.24	.47	.46	Medium
	2007	10,948	.58	.24	.47	.46	Medium
Grade 11 Analyzing & Evaluating Information	2001	11,048	.56	.21	.47	.42	Medium
	2002	11,054	.56	.21	.47	.42	Medium
	2003	11,071	.56	.21	.47	.40	Medium
	2004	11,023	.56	.21	.47	.43	Medium
	2005	10,846	.55	.21	.47	.38	Small
	2006	10,687	.54	.21	.47	.35	Small
	2007	10,948	.54	.22	.47	.35	Small
Grade 11 Analyzing Scientific Investigations	2001	11,048	.54	.24	.42	.51	Medium
	2002	11,054	.54	.24	.42	.52	Medium
	2003	11,071	.54	.24	.42	.50	Medium
	2004	11,023	.54	.24	.42	.52	Medium
	2005	10,846	.53	.24	.42	.47	Medium
	2006	10,687	.52	.24	.42	.43	Medium
	2007	10,948	.52	.24	.42	.43	Medium

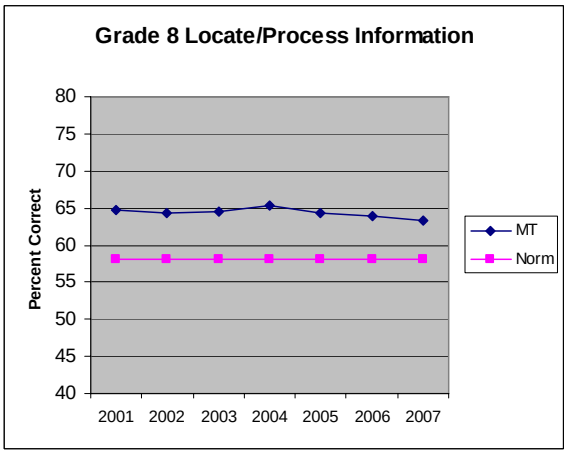




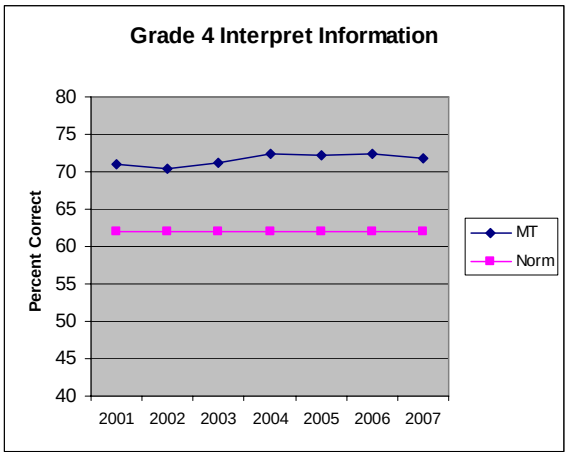


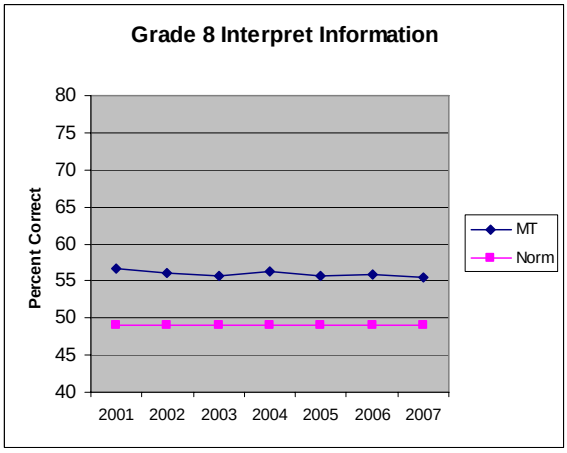
Maps and Diagrams Skill – Locate/Process Information							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,507	.71	.20	.64	.35	Small
	2002	11,411	.71	.20	.64	.33	Small
	2003	10,745	.71	.20	.64	.35	Small
	2004	10,567	.72	.19	.64	.40	Medium
	2005	10,143	.72	.20	.64	.38	Small
	2006	10,223	.71	.20	.64	.37	Small
	2007	9,837	.71	.21	.64	.34	Small
Grade 8	2001	12,138	.65	.20	.58	.33	Small
	2002	11,963	.64	.20	.58	.31	Small
	2003	11,765	.65	.21	.58	.32	Small
	2004	11,992	.65	.20	.58	.36	Small
	2005	11,438	.64	.21	.58	.31	Small
	2006	11,567	.64	.21	.58	.30	Small
	2007	10,679	.63	.21	.58	.27	Small



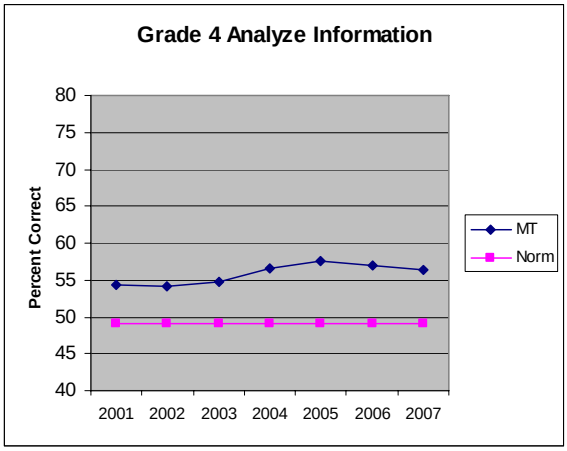


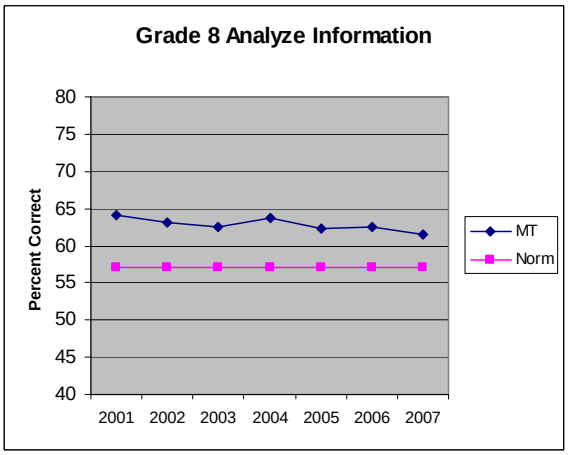
Maps and Diagrams Skill – Interpret Information							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,507	.71	.21	.62	.42	Medium
	2002	11,411	.71	.22	.62	.40	Medium
	2003	10,745	.71	.22	.62	.43	Medium
	2004	10,567	.72	.21	.62	.40	Medium
	2005	10,143	.72	.21	.62	.47	Medium
	2006	10,223	.73	.21	.62	.49	Medium
	2007	9,837	.72	.22	.62	.46	Medium
Grade 8	2001	12,138	.57	.20	.49	.38	Small
	2002	11,963	.56	.20	.49	.35	Small
	2003	11,765	.56	.20	.49	.33	Small
	2004	11,992	.56	.20	.49	.36	Small
	2005	11,438	.56	.20	.49	.33	Small
	2006	11,567	.56	.20	.49	.33	Small
	2007	10,679	.56	.20	.49	.32	Small



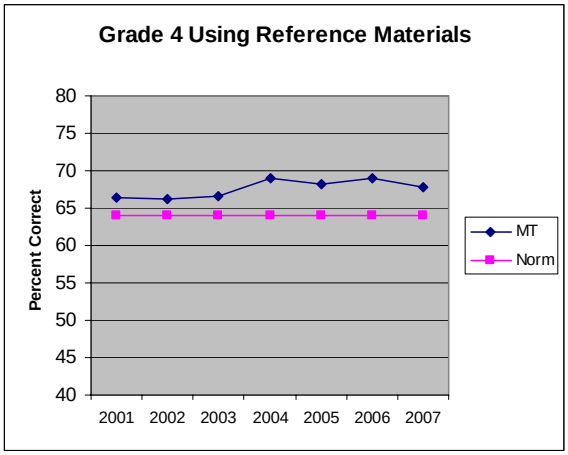


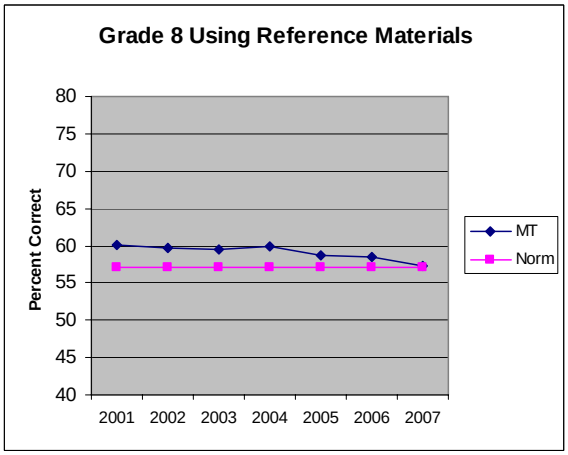
Maps and Diagrams Skill – Analyze Information							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,507	.54	.28	.49	.19	Small
	2002	11,411	.54	.28	.49	.19	Small
	2003	10,745	.55	.28	.49	.21	Small
	2004	10,567	.57	.28	.49	.27	Small
	2005	10,143	.58	.28	.49	.31	Small
	2006	10,223	.57	.28	.49	.28	Small
	2007	9,837	.56	.28	.49	.26	Small
Grade 8	2001	12,138	.64	.23	.57	.31	Small
	2002	11,963	.63	.23	.57	.27	Small
	2003	11,765	.63	.23	.57	.24	Small
	2004	11,992	.64	.23	.57	.29	Small
	2005	11,438	.62	.23	.57	.24	Small
	2006	11,567	.63	.23	.57	.24	Small
	2007	10,679	.62	.23	.57	.20	Small

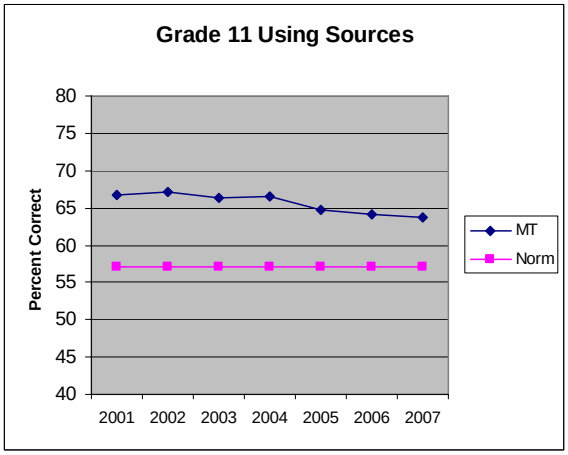




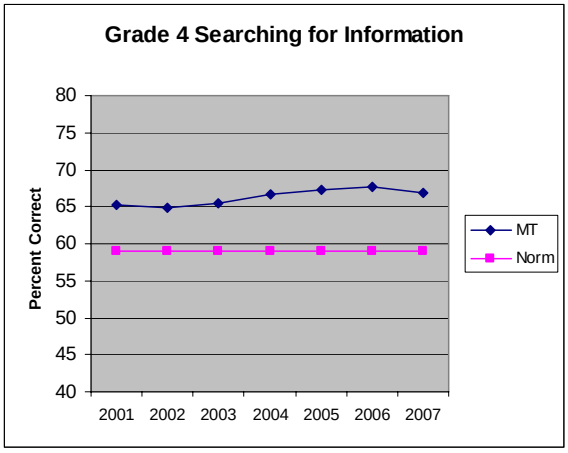
Reference Materials (ITBS) and Sources of Information (ITED) Skill – Using Reference Materials							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4 Using Reference Materials	2001	11,497	.66	.20	.64	.12	Small
	2002	11,403	.66	.20	.64	.11	Small
	2003	10,734	.67	.20	.64	.14	Small
	2004	10,566	.69	.19	.64	.25	Small
	2005	10,139	.68	.20	.64	.21	Small
	2006	10,212	.69	.20	.64	.25	Small
	2007	9,824	.68	.20	.64	.19	Small
Grade 8 Using Reference Materials	2001	12,156	.60	.21	.57	.15	Small
	2002	11,940	.60	.21	.57	.13	Small
	2003	11,767	.60	.21	.57	.12	Small
	2004	11,990	.60	.21	.57	.13	Small
	2005	11,415	.59	.21	.57	.08	No
	2006	11,555	.58	.21	.57	.07	No
	2007	10,732	.57	.21	.57	.01	No
Grade 11 Using Sources	2001	11,034	.67	.21	.57	.44	Medium
	2002	11,058	.67	.21	.57	.45	Medium
	2003	11,068	.66	.21	.57	.43	Medium
	2004	11,010	.67	.21	.57	.44	Medium
	2005	10,837	.65	.22	.57	.36	Small
	2006	10,686	.64	.22	.57	.33	Small
	2007	10,907	.64	.22	.57	.31	Small

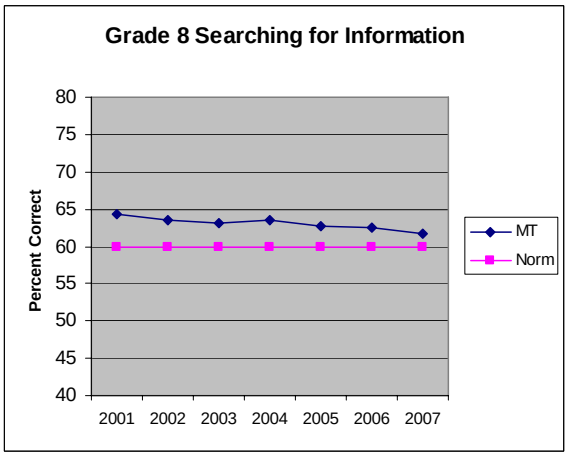






Reference Materials (ITBS) Skill – Searching for Information							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 4	2001	11,497	.65	.19	.59	.33	Small
	2002	11,403	.65	.19	.59	.30	Small
	2003	10,734	.65	.19	.59	.33	Small
	2004	10,566	.67	.18	.59	.40	Medium
	2005	10,139	.67	.19	.59	.43	Medium
	2006	10,212	.68	.19	.59	.45	Medium
	2007	9,824	.67	.20	.59	.41	Medium
Grade 8	2001	12,156	.64	.19	.60	.23	Small
	2002	11,940	.64	.19	.60	.19	Small
	2003	11,767	.63	.18	.60	.18	Small
	2004	11,990	.64	.18	.60	.19	Small
	2005	11,415	.63	.18	.60	.15	Small
	2006	11,555	.63	.19	.60	.14	Small
	2007	10,732	.62	.19	.60	.10	Small





Reference Materials (ITBS) and Sources of Information (ITED) Skill – Using Search Results and Evaluating Sources							
	Year	**N**	**Mean**	**S.D.**	**Norm**	**Std. Mean Difference**	**Strength**
Grade 8 Using Search Results	2001	12,156	.60	.23	.54	.27	Small
	2002	11,940	.59	.23	.54	.22	Small
	2003	11,767	.59	.22	.54	.21	Small
	2004	11,990	.59	.22	.54	.23	Small
	2005	11,415	.58	.23	.54	.20	Small
	2006	11,555	.58	.23	.54	.19	Small
	2007	10,732	.58	.23	.54	.16	Small
Grade 11 Evaluating Sources	2001	11,034	.61	.18	.53	.45	Medium
	2002	11,058	.61	.18	.53	.44	Medium
	2003	11,068	.61	.18	.53	.42	Medium
	2004	11,010	.61	.18	.53	.42	Medium
	2005	10,837	.59	.19	.53	.34	Small
	2006	10,686	.58	.18	.53	.29	Small
	2007	10,907	.58	.18	.53	.27	Small